

JANUARY 1994 Volume 62 No 1



Journal of the Wireless Institute of Australia



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WICEN Seminar
More on Getting a Multiband HF Vertical to Go
Part 2 of a Bandwidth Limited LF Converter
Interference Cancelling
and lots more

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AMATEUR



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Rod Taylor VK3XRW operating at WICEN checkpoint 'Bravo' during the 1992 Murray River Canoe Marathon. Checkpoint 'Bravo' was located in a State forest 20 km west of Yarrawonga.

Photo: Australian Geographic

Amateur Radio Service

A radiocommunication service for the purpose

of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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VK/ rederal Councillor	Jilli Polsyul	AVILA
	CO-ORDINATORS	
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International Regulatory		0.12001.20
s. DSG:	David Wardlaw	WALD

Federal QSP

Here we are at the start of another year so let me begin by wishing you all a Happy and Prosperous New Year on behalf of the Federal Council and the Federal Office. I trust that the New Year brings you all that you wish for you and yours.

As we look forward towards this new year of 1994, we once again turn our minds to the international scene as this is the year for the triennial IARU Region 3 meeting, this time to be held in Singapore. It is an opportunity for the representatives of the member societies to get together to discuss matters of mutual concern and interest. Matters for discussion also include items from the IARU Administrative Council as well as from the other two Regions.

One area of amateur radio activity which has been fostered in Region 3 in recent years has been the sport of ARDF or Amateur Radio Direction Finding, It's a little different from the radio fox hunts many of us are familiar with, being more akin to a combination of orienteering and pedestrian foxhunting.

October 1993 saw the holding of the first IARU Region 3 ARDF competition in Beijing in the People's Republic of China. The WIA was well represented by Wally Walkins VKADO and Frank Sleep VK4CAU. Wally has submitted an article for Amateur Radio which should appear shortly so that we can all learn more about this new sport.

As we start this new year, let us all remember that, as radio amateurs, we can overcome the adversities that surround us if we all take the trouble to try and work together. Some things may not happen overnight and may take what, to you, seems to be an inordinate length of time to achieve. Rest assured, however, that matters are never forgotten. Like great forests, they take some time to come to fruition, but it does need us all to help.

Let us start this new year as we mean to continue, and become more active in our hobby, whether it's simply being on air more often, or helping out behind the scenes.

I, for one, hope to get on air more often and look forward to seeing you there.

Kevin Olds VK10K
Federal President

esiden

Editor's Comment

The Same Old Story?

Back in May 1990 the editorial was entitled "Why Join the WIA?" The question had been asked a few times before that over the years, usually with the same answers. Here I must admit that asking the question in these pages is mostly "preaching to the converted". We can only make our views known to potential members if you, our present members, read Amateur Radio and also show it to your non-member friends. Or at least tell them about it!

WICEN.

President

VK1 Federal Councillor

VK2 Federal Councillor

VK3 Federal Councillor

VK4 Federal Councillor

VK5 Federal Councillor

VK6 Federal Councillor

I was surprised to find that, in fact. many things had changed since 1990. Not so much the answers as the organisation of the WIA itself. Similarly, the organisation of our supervisory body has changed. Even the Act under which we enjoy our "hobby" is new, Incidentally, I do not like the word "hobby" for amateur radio. It's rather like equating Formula One car racing with dodgem cars in an amusement park! But what other word is there?

In 1990 I referred to some peoples' picture of the WIA management as being an entrenched minority of stodgy old-timers; and I invited those who wanted change to join their Divisional Council or the Executive and provide some "new blood".

So what has happened? Executive has ceased to exist! Half the Federal Councillors have only been

Division Address

Councillors for a year or so. Most of the Divisional Councillors are also new names. The WIA has changed very considerably in only a few years. If some amateurs refused to join because "Joe Blow" was "in the chair", think again! Joe Blow has probably been superseded! That in itself doesn't quarantee improvement. but at least it demonstrates willingness to change.

Some things don't change. We now have as members only 34% of VK licensees even less than in 1990. Total licensees are less than 18000 (about one in a thousand of Australian people) So we have as members only 0.034% of the population! Nevertheless we amateurs have access to more space in the spectrum than any other service except Defence.

The Citizens' Bands are tiny in

comparison, yet there are well over 200,000 licensed CBers. If there are to be changes here, who has the numbers? Can we justify our spectrum space? Only as a coherent organised body representing all VK amateurs. If all VK amateurs also helped to pay for the WIA, our subscription fees could be reduced to less than half their present \$40 - \$72 (depending on Division and grade).

Changes in the DoTC have created the Spectrum Management Agency (SMA). That word! Spectrum. It is a finite resource, to become a tradeable commodity on a national market. Who bids on behalf of the amateur service? Only the WIA. Does it have your support? Can it survive without you? Can you survive without it?

1994 Fees

3

The future of amateur radio depends on YOU!

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Weekly News Broadcasts

VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Christopher Davis Hugh Blemings Don Hume	VK1DO VK1YYZ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) (G) (S) (X)	\$70.00 \$56.00 \$42.00
VK2	NSW Division 109 Wigsom Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 699 2417 Fax (02) 633 1525	President Secretary/ Treasurer (Office hours	Terry Ryeland Roger Harrison Mon-Fri 11.00-14.0 Wed 1900-2100)	VK2UX VK2ZTB	From VK2W1 1.845, 3.895, 7.146*, 10.125, 24,950, 28.320, 52.126, 52.526, 44.150, 1.470.00, 48.525, 1281 1.050.00 1.050.0		\$66.75 \$53.40 \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-	VK3PC VK3XV VK3XLZ 1530	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.		\$72.00 \$58.00 \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	Ross Marren Lance Bickford David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	\$72.00 \$58.00 \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428		Bob Allan Maurie Hooper Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelade, 14.670 FM(R) Mid North, 148.900 FM(R) South East, ATV Ch 34.570.000 Adelaide, ATV 444.250 Mid North Barcssa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) (G) (S) (X)	\$70.00 \$56.00 \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Secretary Treasurer	Cliff Bastin Bruce Hedland- Tnomas	VK6LZ VK6OO	146.700 FM(R) Perih, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.160, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt S	(F) (G) (S) (X)	\$60.75 \$48.60 \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Peter King	VK7GL VK7EB VK7ZPK	146.700 at 1900 hrs. 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNNY), 3.707, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	\$69.00 \$55.65 \$40.00
VK8	(Northern Territory is part of VK5 as shown received of	of the VK5 Div on 14 or 28 M	ision and relays bro 1Hz).	adcasts fro	Membership Grades Three-year member Full (F) Pension (G) to (F) (G) (X) grades		

Non receipt of AR (X)

Note: All times are local. All frequencies MHz.

WICEN — Victoria Co-ordinator's Seminar

Howard Small VK3DLH* describes an important WICEN event



Photo 1 (I to r) Nicholas Kanarev (instructor at AEMI), David Tilson VK3UR, Richard Scott (SES Regional Officer) and Hal Hallenstein (State Coroner) chat during a break at the semina.

When the Victorian WICEN Management Committee approved David Tilson's (VK3UR) proposal for another two day live-in Co-ordinator's seminar, it agreed that the priority for training this time should not be related to amateur radio. This might seem strange as we all know that WICEN volunteers simply have to use their technical skill to provide communications for other agencies in an emergency. Training, surely, should therefore revolve around the best way to provide communications? In other words it should revolve around amateur radio

This was a common belief and it showed that the issues of emergency communication management and planning weren't being considered. All amateurs have a level of technical skill by virtue of having obtained a Certificate of Proficiency. Very few amateurs have training or experience in emergency response management. Now that WICEN is a

recognised agency under the Victorian State Disaster Response Plan (DISPLAN) there is an obligation to provide its service at a professional level. This entails provision of communications in total: the provision of equipment and trained operators at a consistent level of performance over an extended period in adverse conditions. The Co-ordinator's role is to make sure this happens and at the same time to plan for the support administration required to ensure the well-being of the WICEN operators in the field.

Being volunteers does not take away any of the responsibilities attached to this role. Usually it makes them even more demanding as the volunteer has the duties of the professional without the luxury of fulltime related employment allowing for extended preparation and training.

The seminar was to address these issues and help Co-ordinators understand and prepare for their

obligations. All Co-ordinators from WICEN Victoria, WICEN and Cld and a representative of the WIA were invited: a total of forty-three attended the Victoria Police Training Academy facilities at Glein Waverley (an eastern suburb of Melbourne). Cost of the seminar (some \$3,000), given the importance of the training and the voluntary participation by Co-ordinators, was to be met fully by WICEN.

The seminar started with a presentation by Acting Inspector Ken Mackey, Victoria Police, The Chief Commissioner of Police has overall responsibility for DISPLAN in Victoria and it is through Inspector Mackey that he exercises his authority. The presentation on DISPLAN structure and responsibilities was authoritative and clarified WICEN's role. It also drew attention to the legislative authority that exists to ensure emergency services can operate unhindered. Inspector Mackey gave some interesting examples of the way this can be used to support WICEN if required.

The presentation on DISPLAN . . . clarified WICFN's role.

Those who believed that proper counselling after an incident was a "Yuppie" activity not meant for real men found the presentation by Simon Brown-Greaves to be an eve-opener. Simon, a consulting psychologist, had worked with the Victoria Police for many years and now provides a consulting service to a range of organisations including banks. His stories of post incident stress involving undercover police, the Hoddle and Queen Streets shootings and armed hold-up victims brought a sense of reality to the issues. When the results of providing counselling to hardened police showed return to duty rates of virtually 100% compared to about 45% for those not receiving counselling it was hard to argue against the benefits and requirement for this work. The Ash Wednesday experience of some attending the seminar made it clear that WICEN

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Photo 2 One of the syndicates hard at work during the exercise. (I to r) Simon Griffith VK3ZNT, Richard Hoskin VK3JFK, Ed Crane VK3KUC, Graham Jackson VK3QBJ, Gordon Cornell VK3FGC and John Pile VK3ZPD.

operators will be exposed to distressing and difficult situations. Post incident counselling will certainly help and the methodologies suggested by Simon will be employed by WICEN Co-ordinators in future. Mr Nicholas Kanarev, from the Australian Emergency Management Institute, who lectures on the techniques for decision making in a crisis, was a lively speaker. Within minutes he had everyone feeling the pressures of crisis decision making and his presentation brought out valuable lessons on the need for careful assessment of objectives. Stripping out the irrelevant or less important issues helped Co-ordinators find the key events when the pressure was on and taught them they value of calm, controlled response during all phases of an incident but particularly during the time immediately following a call out.

It is highly likely that an incident requiring WICEN assistance will also involve loss of life. Mr Hal Hallenstein. the Victoria State Coroner, discussed the legal impact this could have on responding agencies and stressed that the area must be treated as a crime scene. When seen in light of his explanation about the history and role of the Coroner it again brought home issues of direct relevance to WICEN. Most of those present hoped that Mr Hallenstein did not talk too widely of the original role of the "Crowner". The rewards available from a body tax paid by the community seemed too tempting for our governments to resist

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Amateur Radio, January 1994



Photo 3 A syndicate, comprising (I to r) Brett Wilkinson VK2XMU, David Marris VK3DVW, Maggie Iaquinto VK3CFI, Ian Marsh VK3PLL, Colin Lelean VK3CWL and Bill Mahy VK3DIF tackle yet another exercise challenge.

(It seems that, like most taxes, some sought to avoid this one. As death was inevitable, the best avoidance scheme was to move the body during the dead of night to another town which would then have to pay the tax! Hence the King appointed a Crowner to investigate each death and determine which community was responsible for the tax).

Leigh Baker WK3TP, Federal WICEN Co-ordinator, presented the new (second) edition of the WICEN Regional Co-ordinator's Manual. In doing so he highlighted the importance of the Co-ordinator's role and the strategic significance WICEN has for amateur radio generally and the WAI in particular.

Woven between these presentations was a continuing exercise. It aimed to reinforce the issues developed by our guest speakers and provide an opportunity for Co-ordinators to share their knowledge and experience.

The first task of the five syndicates was to respond to a call-out late on Saturday night in which an aircraft had crashed near Healesville (some 70 km East of Melbourne). This area was selected for the exercise as it is poorly serviced by agency communications systems and presents considerable challenges in establishing reliable links (as was well known to the organisers of the

WICEN support for the recent Healiy Stages). The crash, a 747 Jumbo jet, had disrupted police and telephone communications in the area. Forty-five minutes was allowed to develop the initial response plan (being action they would take in the first forty-five minutes after receiving the call). They then presented their solutions to the seminar.

The next phase of the exercise simulated the period (some hours later) when they had arrived at Healesville. They had about half an hour to prepare a briefing on WICEN's capabilities in support of the Emergency Services at this incident. The presentation to the seminar was to be the briefing they would give the Emergency Service Representatives at the local command centry.

Each syndicate received different instructions for the third phase. They ranged from operational planning for communication teams supporting searchers, through similar planning for teams supporting police controlling the area, to post incident plans and proposals for future WICEN training. The presentation, all expected, would again be in the seminar room to fellow participants. Wrong.

The Academy has a court room used for training of Police Officers. It was here that all were assembled to find that three months had elapsed and they were to appear before a



Photo 4 A group photo of those who attended the WICEN seminar



Photo 5 Peter Nilon VK3PG takes the witness stand in the exercise judicial enquiry, appearing before Richard Scott (SES Regional Officer) and Hal Hallenstein (State Coroner), with David Johnson VK3YWZ as the clerk.

judicial inquiry into Emergency Service response to the incident. The inquiry was headed by Mr Hallenstein assisted by Mr Richard Scott. Regional Officer of the Victoria State Emergency Service.

The syndicate representatives who had drawn the short straw were required to take the witness stand and answer some very penetrating questions. This brought home a number of issues but clearly showed the need for retention of message forms and operator log sheets. In hindsight some post incident stress counselling may have been warranted after that experience!

The training program was broken by a formal meal on the Saturday evening in the Officer's Mess at the Academy, During that meal well deserved Certificates of Appreciation were presented to Leigh Baker VK3TP, Federal Co-ordinator, and David Tilson VK3UR seminar organiser. No time was wasted, though, and Saturday night was devoted to presentations by Peter Tvers VK3KTS, on the WICEN National Training Syllabus, David VK3UR, on ADMIN (the emergency services communications network he

administers) and Howard Small VK3DLH on publicity sponsorship.

All participants agreed that the seminar was demanding but very beneficial. The assistance provided by the quest speakers and by the Victoria Police were key factors in the Seminar's success. Another important factor was the sponsorship offered by OPTUS Communications which covered the total cost of the weekend. This clearly saved WICEN's scant financial resources for other tasks but, perhaps as important is welcome community recognition of our efforts; we offer our sincere thanks for the support given by OPTUS

Finally, the seminar organisers would like to give credit to the participants. Their total involvement in the weekend activities and their thoughtful responses to the exercises tasks augur well for WICEN's future in Victoria.

*372 Springvale Road Forest Hill VIC 3131

WIA News

Calling all Divisions

In October, Telecom introduced a new free call service which may interest WIA Divisions. Dubbed the "Statewide 1-800 Freecall" service, it operates rather like the long-established and well-known 008 Freecall service, employed by a lot of businesses.

As you know, calls to 008 numbers are free to callers from anywhere in the country; the holder of the 008 number pays for the incoming calls. The new 1-800 Freecall service is similar, but calls can only be made to a 1-800 number from within the state in which the holder resides.

Free calls to a 1-800 number can be limited by geographical region (for example, outside the state capital's metropolitan area). to given hours in the day and given days in the week - that is, calls to the 1-800 number will only get through between, say, 10 am and 2 pm, Mondays to Fridays. The customer can decide.

You may have the 1-800 number on a separate phone line and handpiece to your existing phone service, or simply have it diverted to your existing (ordinary) number.

Now here's a great opportunity to make it more easy and convenient for members and others who live outside a Division's metropolitan

headquarters to make phone contact. Being able to specify the days, times and geographical limitations to suit vour requirements means you can control the costs, too.

By making it easier and more convenient for people to contact you, you encourage them to do so an important factor in encouraging people to join and for members to order books or other material that your Division might sell. That's the same reason why so many businesses maintain a 008 national Freecall number - to encourage business. Having the 1-800 number divert to your Division's ordinary number (even if it's mostly answered by an answering machine) saves the installation cost of an extra line and phone. 1-800 account charges are \$10 per month (a miserly \$120 per year), plus call charges.

The NSW Division installed a Freecall service in November. Their new Freecall number is 1-800 817 644. It is open between 11 am and 12 noon Mondays to Fridays and 7 pm to 9 pm on Wednesdays. It diverts to the Division's normal number, 689 2417. Callers in NSW and outside the Sydney metropolitan region can use the number to call the NSW Division (and that includes Penrith!). They are trialling it for 12 months.

Getting a Multiband HF Vertical To Go! (Part II)

"Doc" Wescombe-Down VK4CMY/VK5HP* with more useful information about vertical antennas

The Vertical Antenna — How Good is it REALLY?

In response to many requests from other operators, it may be opportune to share some more basic facts about vertical aerials. If we can all agree that a good antenna system makes or breaks an efficient communications station, then perhaps the rest of this article will generate some thought.

Most amateurs I know purchase their equipment, including the antenna. Usually this is a prefabricated Yagi-Uda, quad or multiband vertical for HF use. They then install this atop a roof, mast or tower and commence working the world. Some operators prefer the lower frequencies such as 160, 80 and 40 metres, so their antenna is often a length of wire (resonant or not) loaded by a tuning unit and erected at a compromise height (neighbours, councils, YL/XYL QRM and physical constraints are all prevailing).

But what are these good operators missing out on? They are missing the point that DOLLARS DO NOT REPLACE DESIGN! It doesn't matter if they run an FT1000 into an Alpha 76 or Henry amplifier in the wireless office (my preferred term for "shack"). if the antenna installation is below par. most of their money spent will be wasted. Most of the RF energy produced will be wasted.

Most operators live in built-up residential areas and have the associated constraints mentioned earlier. It is often amazing to me that some RF energy even LEAVES some of the installations visited.

Our key to DX operation is the VERTICAL RADIATION ANGLE of the RF energy that we produce. If we can cause this to be in the vicinity of 20 degrees to the horizon, for example, the first reflection zone (from F layer propagation) will be

approximately 1000 km away. A vertical angle of 50 degrees will produce a first reflection zone of 400 km approximately.

However, if we could LOWER the vertical angle to 5 degrees we would increase our first reflection zone distance to around 2400 km Lowering the angle to 3 degrees will increase this to 3000 km. Although such low angles are not practically feasible, they illustrate the point:

FOR OPTIMUM DX OPERATION. LOWER THE VERTICAL ANGLE!

How does your installation line up? Well, as an example, a half wave dipole for 20 metres at a height of 11 metres will generate a "useful" major lobe between 15 and 45 degrees (all figures approximate). Transmitted power is, therefore, being dissipated over a wide (first reflection) zone of 300 to 1700 km. Your 80 metre dipole suspended 15 metres high will send its "useful" major lobes out at between 30 and 90 degrees! This gives an effective first reflection zone distance of only 800 km and the antenna is primarily acting as a "cloud warmer", ie most of the RF enerav produced bv FT1000/Henry 2 kW amplifier combination is propagated skyward. not to be reflected at all! Is that what you have spent all those dollars for?

Uda array will improve this scene, but all such an array can do is REDUCE THE SIZE OF HIGH ANGLE LOBES. but CAN DO NOTHING TO LOWER DESIRED THE ANGLE RADIATION.

It may be said that installing a Yagi-

So what can we do? Use a vertical antenna

A 5/8 wavelength vertical is the OPTIMUM HEIGHT for HF use. Anything bigger than this becomes useless as well as unwieldy at low frequencies, because the low angle lobe (desirable) reduces rapidly

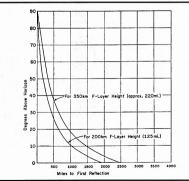


Figure 1 — Vertical radiation angle above horizon vs distance to reflection.

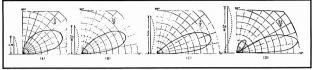


Figure 2 — Vertical radiation patterns for vertical antennas from quarter to five eighths wavelengths long.

(undesirable) and the high angle lobe (undesirable) increases rapidly and bifurcates into a number of useless angle lobes (undesirable).

1/4 wavelength verticals provide a useful lobe at 10 to 55 degrees; 3/8 wavelength 8 to 40 degrees; 3/2 wavelength 5 to 35 degrees and the 5/8 vertical 3 to 27 degrees ideally. This is why so many broadcast stations use this type of antenna.

OK, you say, but what about my location? How does that affect DX performance? A picture tells a thousand words and Figure 3 illustrates the importance of CLEARANCE beyond the ends of radials.

A 1/4 wavelength vertical radiator for 80 m is just about 20 m long, and, given a really good ground system, can have a radiated wave angle useful enough for DX efficiency. RF energy radiated from the top of the vertical will, in part, reflect from the ground about DOUBLE that length wave from the base as shown. This shows WHY LONG RADIALS ARE SO VITAL FOR OPTIMUM

PERFORMANCE. Beyond this zone

should be kept clear of obstructions (trees, buildings, power lines, other towers or masts, etc). This means that for 80 metre operation, no structure taller than the antenna should be closer than 80 METRES FROM ITI Smaller obstacles (fences, clothesline, garden shed, etc) may be a little closer but still not within 40 metres of the aerial!

In conclusion, allow me to quote from LEE (1984) by presenting these comparisons for your consideration. "VERTICAL + HORIZONTAL:

- Low angles are easily obtainable with a vertical antenna.
- (2) The vertical is simpler in construction. Even 50 or 60 foot self supporting pipe masts are easily erected.
- (3) The 'vertical itself requires less space, Ground radials or a ground plane of some sort are required for efficient operation. However, radials can be bent in directions which will fit into one's available space. (NOTE: The author lived in Warwick for one year on a very small allotment and radials for the roof mounted ground plane

antenna were actually wound around the house exterior and fastened to the support stumps and weatherboards as appropriate. Not ideal, but it worked).

- (4) The vertical is easy to feed at its base with unbalanced coaxial cable, using a "gamma" type of feed or a matching network as required.
- (5) The vertical discriminates against TVI because TV antennas are horizontally polarised (Not everywhere in Australiat — Ed). Some claim that it increases BCI. If this should happen, it is not due to its vertical nature but to its strong low angle radiation. ANY antenna which gives strong low angle radiation, such as stacked Yagis, could also cause BCI.
 - (6) The vertical is somewhat more susceptible to rain and snow static and to noise impulses in the neighbourhood when used for receiving.
 - (7) The vertical is non directional and thus cannot discriminate against interference from unwanted

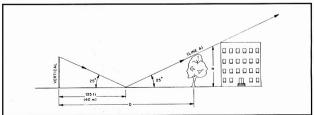


Figure 3 — Clearance required for ideal layout of a vertical antenna.

directions when receiving. However, one could erect three vertical elements and make a very neat switchable array to cover 60 degree sectors in azimuth.

- (8) the vertical is unobtrusive and pleasing to the eye of neighbours.
- (9) The gain of a co-linear vertical can approach that of a three element horizontal Yagi. It is actually greater at the low angles of interest."

Please note that the author claims no originality of material or ideas in these two article parts. But, from an OPERATOR's viewpoint, having used QRP CW for nearly 20 years into G5RV, extended double Zepp, dipoles, 2 and 4 element quads, 3 element monoband Yaqi, 1/8, 1/4, 1/2, and 5/8 wavelength verticals with a variety of radial systems, I am now firmly settled with the 1/4 and 1/2 wavelength vertical for 80 and 40 metres as described in Part I. Having 10 plus hectares of land on an unobstructed hill at 900 plus metres altitude, no power lines for several kilometres and 120 halfwave radials, obviously assists.

However, anyone with, or contemplating erecting a vertical antenna should be able to go about it better!

My thanks to Paul VK5TT for his assistance while I experimented at Whyalla SA on a city lot, and to Andy VK5AAQ whose 160 and 80 metre interest and experience is always appreciated.

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WIA News

UK Call Book

The Radio Society of Great Britain (RSGB) published their 1994 Call Book at the end of October last. Containing over 60,000 callsign listings from the UK and Republic of Ireland it runs to 416 pages and costs nine pounds and fifty pence (plus postage and packing), the same as the 1993 Call Book.

In addition to the callsign listings, the RSGB's 1994 Call Book includes a wealth of information on awards, band plans, beacons, clubs, contests, DXCC countries, EMC, reciprocal packet licensing, propagation, repeaters satellites. Contact RSGB

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SOME THINGS HAVE NO COMPARISON



The magazine for the serious radio operator AT YOUR NEWSAGENT EVERY MONTH

The Bandwidth Limiting LF Converter Simplified

Lloyd Butler VK5BR* continues his development of low frequency receiving converters

Introduction

In my previous article (ref 1), I discussed reception of signals around 200 kHz and introduced an initial and control the bandwidth of an LF converter. An experimental circuit was presented which made use of discrete component oscillator and mixer modules which I had on hand. I indicated that I would do some further work to simplify the circuit and in particular make use of the NE602 package which is a balanced mixer with inbuilt oscillator facility. The new circuit is now presented.

As in the previous circuit, signal pick-up is via a tuned loop antenna which also provides front end signal selectivity and the mixer output is fed to the receiver via a crystal filter around 1.5 MHz. The reasons for choosing this arrangement were given in the previous article and reference should be made to that article for the background.

The NE602

The NE602 package is a double balanced mixer with an onboard oscillator which injects its signal internally into the mixer. It can operate at frequencies well up into the VHF region and requires minimal peripheral components. To make the oscillator work, it is only a matter of connecting the oscillator work with association to a crystal or an inductor with association as constitution of the oscillator work of the oscillator work in a Colpitits configuration.

The NE602 is finding its way into many amateur radio applications and because of this I think I should highlight a few precautions concerning its application. The first procaution concerns the low input level at which the third order intercept occurs. Let us explain this a little further. The mixer output frequency is the sum or difference of the socialator

and signal frequencies. Other mixing products are also produced, the most significant of these being what are called the third order products. Whilst the output voltage of the desired sum or difference frequency increases linearly with the signal input voltage, the third order products increase in a steeper slope curve following a cubic function law. The curves of figure 1 from the NEGO2 application notes show how the two components

". . . the input signal range should be between a few microvolts and

27 millivolts."

increase with different slopes. It can be seen that there is a theoretical point where the curves cross and the components have equal output voltage. This is called the third order intercept point. Having defined the point, the difference level between the two components, for any signal input level, can be worked out by extrapolating down the linear and cubic law curves from this point.

The level of third order products relative to the desired signal products is a measure of cross modulation in the mixer. To minimise cross modulation, we must ensure that the third order products are well below the desired output signal and for amateur radio purposes, I would suggest a figure of at least 40 dB. To satisfy this requirement our signal into the NE602 mixer should not exceed minus 33 dBm which into its 1500 ohm input resistance is 27 millivolts. (Compare this to the XR2208 package I have previously used as a VLF/LF mixer which can tolerate several volts before third order products become excessive). The consequence of all this is that the level of signal input and preamplification (if used) must be carefully controlled to prevent driving the mixer into a state of serious cross modulation.

At the other end of the scale, the minimum level of signal into the mixer is set by its noise floor. The rated noise figure is 5 dB and this works out to around 0.3 microvolts of noise at a 1000 hertz bandwidth across the 1500 ohm input resistance of the mixer. For good signal to noise ratio, the minimum signal level should be somewhat above this figure. Combining this with the previous paragraph, we can deduce that the input signal range should be between a few microvolts and 27 millivolts.

The NE602 can be operated balanced or unbalanced and many of the receiver circuits I have seen in journals have used the unbalanced input form. From my own experience, the mixer performs much better in its balanced form and I don't recommend operating it any other way.

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Another point worth noting is that the NE602 is fully biased internally. If a connection is made to earth or other point with a defined DC level. couple via a capacitor.

The package I obtained was an NE602A which apparently is an upgraded version of the NE602. In examining the application sheets, there doesn't appear to be much difference between the performance of the two. They are both available in different packages and temperature ranges defined by an additional letter code. For example, the N package is the 8 pin plastic DIP in a temperature range of 0 to 70 C.

The Converter Circuit

The complete LF converter circuit including the NE602 mixer (N2) is shown in figure 2. The same loop antenna and loop tuning system is used as in the previous circuit. The high Q loop circuit is tuned to resonance at the incoming frequency. This increases the loop sensitivity and provides selectivity to reduce the level of strong signals at other frequencies. If not attenuated, these could cross modulate the selected frequency in the mixer and hence some form of selective tuning is essential in the front end. If you have any ideas of using a broadband front end with this mixer, then I suggest you forget it.

The high impedance input circuit of the LF353 JFET operational amplifier (N1A) prevents loading and degrading the Q factor of the loop. The LF353 has a satisfactory noise figure and has a gain-bandwidth product of 4 MHz, which makes it suitable for the LF frequency range. If you examine my previous circuit, you will see that the loop interface amplifier had a considerable gain. Not so in the new circuit where the gain is set to 1, limited to prevent excessive signal drive to the mixer. Even with the low signal sensitivity of the loop, the mixer can be easily overdriven. For example, Adelaide Airport Non Directional Beacon (NDB) is around 8 km from my location and this gives a signal output across the tuned loop of 100 millivolts. This level is too high and I have provided a potentiometer RV1 at the output of the loop to reduce level if required. The converter is normally operated with

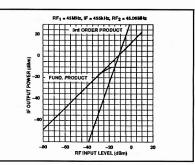


Figure 1 — NE602A — Fundamental and third order products showing third order intercept.

this control set maximum as the loop tuning provides adequate attenuation of strong signals. It is sometimes necessary to adjust the potentiometer down a little when tuning on to the strong station or when tuning to a weak one close in frequency to the strong station.

As discussed earlier, the mixer

works best in a balanced mode and a transformer can be used at the mixer input to achieve this. Because we are operating down to 150 kHz, we ideally need a primary inductance of 2 mH or more. This is difficult to achieve with the usual toroidal core and is more easily achieved with a small pot core. In my previous circuit, the mixer input was fed via a small toroidal core transformer and I have to confess that there was signal loss due to lack of primary inductance. This loss was made up by extra gain in the drive amplifier. The LF353 has two amplifiers in a single package and in the new circuit I eliminated the need for a transformer by connecting the second amplifier (N1B) as a phase splitter to provide the second half of the balanced input. With the phase splitter provided, the gain from loop output to balanced mixer input is doubled to a value of 2.

No problems were encountered in setting up the oscillator. As in the previous converter, the oscillator is set to tune from 1.65 to 1.87 MHz so that with a first IF frequency of 1.5 MHz, the converter operates from 150 to 370 kHz. Using the Colpitts arrangement shown in figure 2, a 27 microhenry inductor (L1), a 130 pF variable capacitor (C19) and a number of fixed capacitors achieve the tuning range. The form of inductor is not important but I wound 28 turns of 28 B & S wire on a Philips 97170 toroidal core and juggled the fixed series and shunt capacitors to get the precise range. A 27 microhenry miniature choke also worked OK but I thought the toroid, with its confined magnetic field, might be preferable.

The crystal filter is the same as used in the previous circuit with a 1.5 MHz crystal frequency selected to achieve a minimum bandwidth of around 200 to 250 Hz for narrow band signals. The precise frequency is not important provided the oscillator used in the mixer is adjusted accordingly for the difference frequency. The logarithmic law potentiometer (RV2) across the crystal allows bandwidth adjustment and this was explained more fully in the previous article. The potentiometer must be connected for maximum resistance when set fully clockwise

The circuit is designed around a 12

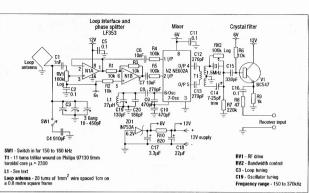


Figure 2 — The complete LF converter circuit including the NE602 mixer (N2).

volt power rail although the precises voltage is not too important. The maximum voltage on the NE602 is specified as 8V, hence a lower 6V rail for the mixer has been derived from zener diode 2D1. The 6V rail is also used to set the operating points of the LF353 amplifier and the crystal filter interface emitter follower V1. This saves a few resistors.

Tests on the converter were carried out with the loop antenna indoors and connected through 1.5 metres of RG58 coax. The 0.8 metre square loop is a bit cumbersome inside the radio shack but it works very well in this environment. The only precaution I have had to take is to turn off the fluorescent lights as they radiate quite a bit of RF noise. The loop can be operated outdoors with a longer length of cable but every bit of cable adds capacity across the loop and reduces its maximum tunable frequency. This can be corrected by taking off a turn or so on the loop with a penalty of reduced loop sensitivity.

Assembly

My main aim has been to produce a workable circuit for the converter and at this stage of writing, my test rig is in experimental form with sections of the circuit separately hard wired and fitted together with the tuning capacitors on a base board. So if you are interested in this converter, the layout is now left in your hands. I don't anticipate any layout problems at these low frequencies. A geared drive is essential for the oscillator furning and desirable, although not essential, for the loop and the converter of the review of the converter of

Operation

In setting up the receiver, it is first tuned as close as possible to the crystal filter frequency as indicated by the receiver calibration. An NDB signal is tuned in by the converter and the receiver is then finely tuned for maximum signal, preferably indicated on an S meter if fitted. The signal can be located with the crystal filter set for wideband but it is important that final adjustment be made with minimum bandwidth.

Tuning of the loop is fairly sharp and must be set for maximum signal. Manual adjustment of tracking between the loop tuning and the socialitart runing is simplified if both tuning dials are calibrated for frequency. Some misleading cross modulation effects can occur if the loop is wrongly peaked to a strong signal not selected by the oscillator tuning. In searching for signals, rotation of the loop is part of the tuning fittal.

Performance

Applying a signal generator directly to the LF353 input and using the receiver beat oscillator as for CW reception, the minimum discernible signal level is less than 1 microvolt. For a 30% amplitude modulated signal with the receiver in AM mode, the minimum discernible signal level is 3 microvolts.

The loop O factor is around 20 to 30, depending on frequency. Using a O of 20, the calculated loop sensitivity is close to 1 microvolt per microvolt/metre. Minimum discernible field strength is therefore derived as 1 µV/metre for CW and 3 µV/metre for AM. In operation, weak signals just riding above the ambient atmospheric floss have been found to be well

above the minimum discernible level of the loop-converter combination.

Conversion gain from the LF353 input to the crystal filter output is approximately 2 for the widest band setting and 0.5 for the narrowest band setting. Mcst reasonable receivers can handle signal levels in the order of microvolts and should be comfortable with this conversion gain.

Operated as described so that the mixer is not overdriven, the loopantenna/converter unit seems free of the odd birdies, often experienced with some superhet receivers which have been extended to tune down to the LF band.

Conclusion

Adding this converter to an existing receiver is a simple way to extend band coverage down to the LF region. Its design was aimed at the reception of experimental signals around 200 kHz such as those recently transmitted from Gordon, Victoria and recent experiments in New Zealand.

The article is an extension of my previous article where I introduced the idea of controlling the received bandwidth within the LF converter. Use of the NE602 mixer has simplified the circuitry. A few notes which I have given concerning the application of this mixer might be of help to others making use of this versatile package. To follow on, I might have look at extending operation down to the VLF rape as enow well can make it work. If it looks OK, a third article in the series might be forthcoming.

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WIA News

Special Event Station

To commemorate the 50th anniversary of the battle of Kwajalein Atoll in the Pacific Republic of the Marshall Islands, special event station V73AX will be on the air, courtesy of the Kwajalein Amateur Radio Club (KARC).

Starting at 1745 UTC on 31 January, the station will operate through to 1920 UTC on 5 February, 1994. Look out for V73AX on the HF bands and six metres (conditions permitting), operating SSB. CW and RTTY.

If you manage to make contact, QSL (with SASE or IRC) to:

KARC PO Box 444

APO AP 96555 USA

Thanks to John A Taylor V73JT, Vice President of the KARC, for that item.

Region 1 Digital Bandplan Changes

At the International Amateur Radio Union (IARU) Region I Conference late last year, the HF RTTY mode bandplan allocations were renamed "Digimode", to cover all digital transmission modes, including RTTY, AMTOR, PACTOR, Clover and Packet. Some band allocations were increased.

November last's issue of the RSGB's journal Radio Communications carried a report on the Conference decisions; the RSGB's 1994 Call Book carries updated bandplans.

Direction Finder Ducks Back After China Success

Wally Watkins VK4DO, intrepid amateur radio direction finding (ARDF) expert and international traveller, has returned from the wilds of Huairao County in the Peoples' Republic of China, enthusiastic about his Australian team's showing at the IARU Region III contest, held over 5-10 October.

The Federal WIA supported Wally's effort to compete in the ARDF contest in China with a donation of \$1000 towards the team's expenses, made earlier in the year.

Other countries taking part in the Region III International Amateur Radio Union's ARDF contest included: Bulgaria, China, North and South Korea, Japan, New Zealand and Taiwan.

Interviewed by the Sunshine Coast Daily on his return Wally, a resident of Proserpine Old, said, "Taking into consideration that Hasian countries have been taking part in amateur radio direction finding for some 30 years, the Australian team performed quite well for its first effort."

well for its first effort."

Wally and Frank Sleep VK4CAU
teamed up to enter the old timers'
section of the ARDF contest. Now
it must be understood that these
direction finding contests are not
like the foxhunts we know and love
in Australia. They're more a cross
between a pedestrian (han!)
toknunt, orienteering and a cross
country foot race. Not for the faint
hearted or unfl.

From the start line, you have to charge off — up hill and down dale — to find and record on a card a series of hidden transmitters (all five of them), before reaching the finishing line. And your time for the hunt/race is recorded — to the nearest second!

Each race is refereed. Before the contest, a training course for international class referees was held in Huairao County and Wally is now Australia's first international referee.

Well done, Wally and team.

Licence Exam Pass Rates Improve

Since the WIA Exam Service started in October 1991, the average per annum pass rate of candidates has climbed from 46.9% in 1991-92, to 57.52% for 1992-93.

Over the period from October 1991 through October 1993, 4063 candidates sat for 7102 subjects. Altogether, 3886 achieved a pass, 54,72% of candidates who sat.

14

EQUIPMENT REVIEW Timewave DSP-9 and DSP-59 Audio Digital Signal Processors

Ron Fisher VK3OM and Ron Cook VK3 AFW



The DSP-9 and DSP-59 sitting on top of the Kenwood TS-430S transceiver used in the evaluation of the filters.

The latest device to fight interference in radio reception is the digital signal processor. Of the several being produced in the United States. Daycom (the new name of Stewart Electronics) have selected the Timewave DSP-9 and DSP-59 audio noise reduction filters. I must admit that I am not an expert in digital electronics, so I have asked my good friend Ron Cook VK3AFW to write a few words on just how these things work. Before handing over to Ron, I intend to report on the operation of these units connected to typical amateur equipment and used in a quieter than normal location.

The first illustration shows them sitting on my TS-430S transceiver which was used throughout the tests. Both filters are contained in neat black plastic cabinets with the

controls on the front panels and the input/ output and power connectors at the rear (see the second illustration). The input to both units comes from the external speaker output of the associated transceiver and an inbuilt audio amplifier drives the speaker. Both units require 12 to 14 volts DC at about 500 ma. Of course a reasonable quality external speaker is also needed to complete the setup. For some strange reason, Timewave seem to be confused as to which type of connector to use. The DSP-9 uses phono sockets for both input and speaker output while the larger DSP-59 has 6.5 mm phone sockets for the same functions plus an extra 6.5 mm socket for line output. Seems odd that they didn't use a 3.5 mm socket for at least the speaker output. Both use a standard DC

connector with the centre pin for positive. A DC connector is supplied with the processors.

So what do Timewave claim their processors will do? Firstly, they are designed to reduce all types of residual noise. Secondly, they will eliminate any number of heterodynes audible within the band pass, and finally they have very steep sided audio filters useable on both voice and CW signals. In the case of the DSP-9, voice filters are provided for 1.8. 2.4 and 3.1 kHz and for CW, 100. 200 and 500 Hz filters are selectable. The larger DSP-59 has basically the same features but with much greater flexibility and a wider range of filter selections. All functions on the DSP-9 are selected via six front panel push buttons plus a normal rotary audio gain control which also has an off position to cut the 12 volt power supply. The DSP-59 uses three rotary controls to select the various functions plus an audio gain/on/off control.

Two LEDs help to set the input audio level, one flashing with normal input and the second flashing to indicate an overload condition. A 3.5 mm socket is also included on the front panel to take a pair of headphones. This is compatible with stereo phones so you will be able to borrow a pair from your teenager's Walkman and plug in.

The Timewave DSP-9 & 59 in Use

As all of my speakers terminate in 3.5 mm plugs, I used adaptors to connect into the two Timewave processors. Another lead with a 3.5 mm plug and either a phono plug or 6.5 mm single circuit plug is needed 50 mt single circuit plug is needed 50 mt adaption to the processors. The 12 volt DC supply needs to be well filtered and regulated. I tried a 500 mt plug pack power supply but it caused all sorts of funny hum problems.

level from the transceiver is needed to get the "normal" LED to flash aid it is very important that this should happen. When I first hooked the unit up, I thought I would take a short cut and feed the processor from the headphone socked not the TS-430. It proved impossible to drive the processor hard enough so a quick



The rear panels of the filters with the DSP-9 on top.

change was made to the speaker output. First, I had a play with the filters.

Changing from the \$1.1 to the 2.4 kHz band pass produced a just perceptible change in audio quality but heterodynes and noise above 2.4 kHz disappeared like magic. Changing to 1.8 kHz brought an even greater reduction in off frequency noises with a slight reduction in top audio response.

The effect on CW with the narrow band pass is equally dramatic. The larger DSP-59 allows not only the choice of selectivity but also the choice of the centre frequency which makes it very suitable for digital modes.

Next on to the noise and heterodyne reduction features. As I mentioned earlier. I live in a very quiet location. There is only one thing that makes life on the air difficult. Rain static. Well. I had to wait to test that one out. Reduction of general noise, such as static, was interesting. With a moderately strong signal, the effect was often amazing. The signal would take on a slight synthesised sound, the noise would fade into the background and make the audio really stand out. However, as the signals became weaker the effect diminished with it. Enough to say that I could not find a case where I could make a totally unreadable signal readable. By far the best effect was to remove noise on moderately strong (about S6 to 7) signals. At long last the rain came (you don't have to wait too long in the Melbourne area) and with it S9 rain static. I regret to say that the processors made no improvement at all.

The heterodyne reduction facility is startling in its effectiveness. Just push the button on the DSP-9 or select the switch position on the DSP-9 and the whistles go. What more can be said? Ron VK3AFW tells me that the uses his DSP-9 for weak two metre CW use and claims that it really does make almost unreadable signals readable. I also noted that use of the transceiver noise blanker in conjunction with the DSP can add to the effectiveness of the processor.

The DSP-9 and DSP-59 Conclusions

Are these units worth while or not? The answer to this is a very definite yes. If you are a keen CW operator it would be hard to live without one. I don't doubt that in time, perhaps a short time, these units will come built into transceivers. Crystal IF filters will become a thing of the past and steep sided digital filters will become the norm. In the meantime, enjoy the advantages of digital signal processing with the DSP-9 and DSP-59.

I hope that when Timewave update these models they might sort out the connector problems and maybe even have time to write a better instruction book. The DSP-9 is priced at \$339 and the DSP-59 at \$629 from Daycom Electronics.

Now over to the other Ron to tell us just how these little electronic marvels work......

How Does a Digital Filter Work?

We are all familiar with analog filters, an example of which is shown in Fig 1. This is a single section RC low pass filter. DC and low frequency AC signals are not attenuated but as the frequency is raised, so the output falls. That is, the attenuation increases with frequency. The phase of the output signal also lags behind the input signal, the phase difference being greater at higher frequencies. Cascading several of these circuits gives both a sharper band edge roll-off and a greater phase short

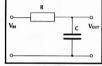


Figure 1 — Simple analog low-pass filter circuit.

We also know that if a DC voltage is suddenly applied to the input, the output rises slowly to the input value, the rate of rise being determined by the product of R and C. In other words the circuit in Fig 1 is also a delay circuit. We already know this as RC networks are used for the basis of many timing circuits. Eurher study would reveal that an analog delay circuit using discrete components usually has a bandwidth which is inversely proportional to the delay.

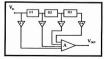


Figure 2 — Filter using a tapped delay line. D1, D2, D3, incremental delays K1, K2, K3, K4 multiplication constants A summing amplifier.

Fig 2 shows a series of delays. This could be an analog system with taps. The input signal and the delayed signals from the taps are amplified or

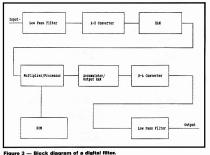


Figure 3 — Block diagram of a digital filter.

attenuated and added together to produce the output signal. With the proper components and values this will give exactly the same response as three RC cascaded filters. The circuit can be implemented using analog components or with digital circuitry.

Fig 3 shows a digital version of Fig

2. Firstly, the analog signal is passed through a low-pass filter to avoid a problem called aliasing. An analog to digital converter (A-D) then converts instantaneous values of the analog input signal to a digital number. The effect is like a picket fence where a solid fence is approximated by many thin pieces of the same height (see Graph 1). Sampling allows reproduction of frequencies up to half the sampling rate. It can down convert even higher frequencies to ones less than the sampling rate, a situation not wanted in this application. This creation of new frequencies is called aliasing and is avoided by filtering out all frequencies above half the sample

Each digital sample is stored in digital memory (RAM). Each memory location represents a tap on our delay line. We select the stored value when we read the memory location. The delay is generated by reading memory locations at specified rate. A multiplier chip accepts the stored values and multiplies them by

predetermined constants which are stored in digital memory (ROM). The results are added into an accumulator. The digital number in the accumulator is converted into an analog voltage by a digital to analog converter (D-A) and the digitishing noise removed by a simple low-pass filter.

The resultant output signal will be filtered in exactly the same way as would have occurred in the analog circuit of Fig 2. A digital filter may have more than 25 taps in even a cheap system, resulting in very sharp roll-off at the band edges.

Having implemented a low-pass filter with only a few readily available chips, the question arises, can high-pass filters be constructed? The answer is yes, and what is more they can be combined to form a band-pass filter with linear phase response and very sharp roll-off. The circuit connections remain the same, however the constants used in combining the delayed samples can be changed for each calculation if required.

A system where the input signals only are used implements what is called a Finite Impulse Response filter (FIR filter) and a system that takes the processed signal and subjects it to delays and combines it with the input can be used to implement an Infinite Impulse

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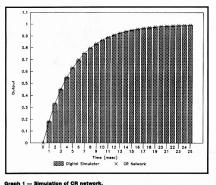
pressed... Over the Moon" "I have a number of logs and Ham Log is on the hard disk to stay!" "It is without doubt the best Log I have ever used - you have covered everything - a breeze to use" "A super program and Australian" "Thanks for the excellent back-up service" An FK8 wrote to the magazine Megahertz: "My job - programmer of 14 years... I've acquired 10 log programs without ever making use of them until I purchased Ham Log. It has maximum ease of use whilst keeping a rare functional richness... perfect statistics, listings and rare tools - torture it; one use will make you appreciate its flexibility." VK6PY, VK4VHP, VK5QB, FK8GV.

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Graph 1 — simulation of the network as in Fig 1 is compared to a digital simulation of the same network. The time constant is 5 milliseconds and the digital algorithm is: Yout = 0.18127 Vin + 0.81873 Vota

Response (IIR) system. The DSP-9 used the FIR implementation partly because it provides a linear phase response which gives the minimum amount of ringing for narrow filters.

There are of course some compromises. The multiplier must read each memory location, do the multiplications and transfer results to the accumulator before the A-D takes its next sample and the D-A puts of the next signal. The speed required limits inexpensive digital filters to the audio range but military receivers are using digital filtering at an IF of 1.6 MHz.

The DSP-9 uses a special chip which performs both AD and D-A conversion and includes all necessary filtering. It uses a 16 bit process. The processor contains sufficient RAM to accommodate at the samples. The program and all constants are stored in a 256 k EPROM. The results of each computation are placed in a quad flip-flop for the D-A to convert back to audio. A 5 watt amplifier drives an external speaker.

Digital filters in the amateur radio market are mostly using 16 bit word lengths and combined multiplier accumulator chips. A 16 bit word allows a dynamic range of 96 dB but the band reject attenuation is around 60 dB for most digital filters on the amateur market. This is usually very adequate.

One problem that appears is the small number of bits available to represent weak signals. Consequently they sound like a strangled Dalek. Faster systems with higher resolution D-As and 32 or 64 bit processors will no doubt appear eventually and give improved weak signal recovery, increasing the fidelity and out of band attenuation. Having converted to dioital form

many samples of the signal, plus noise and interference, there is an opportunity to perform other functions as well as filtering. Notching of constant tones can be achieved by

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various means, depending on the computing power available. Reduction of random noise can also be achieved by comparing delayed samples with the present sample. Audio signals show a high degree of correlation but noise does not, so the noise can be rejected. This provides a basis for implementing a noise reduction scheme in addition to that obtained by bandwidth reduction.

WIA News

"Instant licences" for US Hams?

A US amateur radio society has petitioned the Federal Communications Commission (FCC) seeking a rule change that would permit "instant" amateur radio licensing.

The Wastern Carolina Amateur Radio Society (WCARS), based in Knoxville, has asked the FCC to allow amateur operating privileges to start immediately someone passes the required exam, without having to wait for a licence to be issued.

When licence exam candidates in the US pass their exam, they're issued with a Certificate of Successful Completion, with which they can apply for their first licence. WCARS' instant licensing scheme would save the frustrating waiting period for new hams, the protagonists claim, as well as saving the FCC time and money as the impatient new hams keep calling them for news of their licence.

WCARS proposed a callsign structure based on the US Class D Citizen's Radio Service (CRS) precedent, set a few years ago when the FCC deregulated the CRS.

From the Westlink Report.

Technical Abstracts

Gil Sones VK3AUI

The Green Dipper

An intriguing title for an article which appeared in Short Wave Magazine for May 1993 and described a different Dip Oscillator. The author, Bill Wilson, described a useful Dip Oscillator with a very simple circuit and which used a tuning capacitor from an AM/FM transistor radio. The case was a cut down sutures box.

The AM/FM tuning capacitor provides a number of sections ranging from around 20 pF for the FM sections up to a couple of hundred pF for the AM sections. The appropriate sections are selected by links in the coil sockets. The coil sockets used were six pin edge connectors.

Coils were attached to the edge connector and a card dial scale so that the scale was changed with the coil. The coil details and coverage are dependent on the actual capacitor used. For a guide try the use of all capacitor sections for the low ranges up to 10 or 11 MHz. Then use both FM sections in parallel up to 30 MHz. At VHF just one section of the FM and pang should suffice. The band

coverage and the bandspread of the tuning are up to the constructor.

The circuit is given in Fig 1 and a neat package for soldering the FETs together is shown in Fig 3. Whilst the original used a PCB, direct wiring using a copper laminate as a ground plane and panel would be quite suitable. The components are listed in Fig 2. Whilst C6 appears twice on the circuit in Fig 1 it is fairly non critical and the same value capacitor can be used in both positions.

The circuit used for the oscillator is a negative resistance design using a pair of FETs. Note that one FET is an N channel and the other is a P channel. The supply of the FETs may be difficult but a quick ring around Daycom, RS Components, Farnell and your other suppliers should turn them up. The 2N3820 is likely to be the hardest to obtain.

Bypasses C5 and C6 across D5 should have very short leads. The connections from Tr1 and Tr2 to both C5, C6 and to the tuning capacitor and coil should be very short. By short I really mean zero lead length as these components are all part of

an oscillator circuit extending into the VHF region. C4, whilst listed, can be a gimmick capacitor made by twisting two short insulated wires together for a capacitance known as enough. R7 can be included or omitted as it is only to damp oscillation and so make the dip more apparent. R7 could be included only on those coils where it is needed and its value varied to suit.

A more complex circuit with provision for modulation and recharging NICADs was also given. The complex circuit is not reproduced here as the basic circuit is quite adequate as a Dipper. There is some virtue in the KISS approach in such projects.

After all that you are probably wondering about the green title. Well, the green comes from the re-use of parts from the scrap bin such as the sutures box used for the case. Have a look around and there are probably many alternatives for cases. Similarly, the AM/FM tuning capacitor can be salvaged from a radio that is heading for the bin.

Fig 2 Parts List.

Resiste

Resistors 1/4 W

	R2 1K5
	R3 1KΩ
	R7 10KΩ
ı	Potentiometer
ı	R8 5KΩ
ı	Capacitors Disc Ceramic
	C1, C2, C3
ı	AM/FM Gang Film Dielectric
ı	C4 4p7
ı	C5 1nF
ı	C6 1nF
ı	C6 1nF
ı	Semiconductors
ı	Diodes
ı	D1, D2 OA81 or sim.
ı	D5 5.1 V 400 mW Zener diode
ı	TR1 2N3819
ı	TR2 2N3820
	TR3 2N3710
ı	(try BC108 or sim)

Mobile Supply Switch

Battery B1 9 V

The high DC drain of mobile rigs, together with the sort of car battery capacity used, can lead to embarrassing situations. The DC drain of many mobile rigs is enough to significantly drain many car

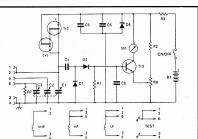


Fig 1 Basic Circuit.

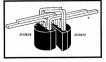


Fig 3 Connection of Tr1 and Tr2.

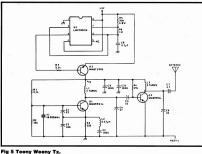
batteries over a day or two. Modern car batteries are designed to start the engine and do not have much in reserve for running your rig over an extended period with the motor stopped. The radio is also designed for use with the engine running and hence the 13.8 V supply requirement.

One solution is to run the radio off the accessory line but the transmit drain may make this not viable. Bill Wells KA5DMY provided a solution in Hints and Kinks, in QST for July 1993.

The solution was to use a couple of automotive lighting relays to switch the line to the battery. Provision was made to postpone switch-on until the motor had started in order to avoid transients. The relays are held in by the accessory line.

The circuit is shown in Fig 4. The radio goes off when the ignition is turned off. The radio will not come back on until S1 is depressed after the ignition switch has been turned on. S1 is a momentary action switch. The diode isolates the radio from the

accessory line.
In running the leads to the battery make sure to fuse both leads. Take the negative lead from the car



Caps are pF unless otherwise noted.

ensure that part of the starting current does not pass through your radio. The radio is also grounded via the antenna and the possibility of a high stray current path exists. Hence the fuse often found in the negative lead. Better replacing a fuse than a radio.

Teeny Weeny Tx

Here is a small two metre Tx for hidden transmitter hunts which should be very easy to conceal. The original measured 32 mm x 13 mm and could be powered by a 3 V Lithium button cell to give a couple of milliwatts.

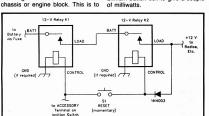


Fig 4 Mobile Supply Switch.

The design appeared in 73 Amateur Radio Today for May 1993 in the Homing In column of Joe Moell KOOV. The Tx was developed by Ken Bauer KBETTS who used it to track gliders. There are smaller designs but not many. The units used to track birds in flight are really tiny but this design, using surface mount bits, is capable of home constructions.

The circuit is given in Fig 5. The circuit board layout is given in the original article but would suffer in reproduction. The original used a double sided board and, provided short, direct paths are used, you should be able to make a suitable one of your own.

Circuit boards were available in the USA direct from the original designer. If you are really keen, then obtain a copy of the magazine and you may be able to order a PCB direct.

For surface mount parts you may have to search around a bit. They are available but you do have to look for them. The larger and more professional suppliers can probably help.

The coils are wound on a .060 inch drill bit. Try a 1.5 mm drill bit as it is close to this size.

With a little bit of fiddling you should be able to make a close enough copy. The fun then starts when you use it in some really sneaky transmitter hunts.

Some Further Notes on Interference Cancelling

Lloyd Butler VK5BR* adds some further notes on cancelling interfering noise.

Introduction

In the September 1992 and January 1993 issues of Amateur Radio magazine, I discussed how interference could be cancelled at the antenna input and introduced two circuits which could be used to achieve cancellation. I have a few notes to add to the original discussion and will also comment further on the SEM QRM Eliminator briefly mentioned in the September 1992 article.

Earth Noise

In the previous discussions it has been assumed that interfering noise is induced into the antenna wire from a radiated noise source. When the antenna is partly formed by an earth system, such as in the Marconi antenna, this is not always the case. Sometimes the noise is conducted in through the earth system rather than via the sky wire. In this case, signal pickup from another auxiliary antenna might not provide sufficient noise voltage for cancellation. If interference cancellation cannot be achieved using an auxiliary antenna. try connecting the auxiliary antenna input to the main antenna ground connection. On a number of occasions I have had success using the ground connection when the auxiliary antenna did not provide a satisfactory result.

Receiver Input Matching

In my circuit published in the September 1992 issue of Amateur Radio magazine, I used a matching transformer to face the receiver input. In the circuit published in the January 1993 issue I simplified this by using a matching resistor (R8 in the circuit). This arrangement introduced a drop in receiver input level when

interference cancelling was switched in. The drop in received signal heard annoyed me a little and I eventually deleted R8 and modified the circuit to include the original transformer arrangement. With the circuit changed, I also found it necessary to add a resistor (a new R8) to isolate V2 emitter from transformer T1. This improved circuit stability and reduced a tendency for signal cross modulation apparently caused by the interface. The modified circuit detail is shown in figure 1.

SEM QRM Eliminator

The interference cancelling unit made by SEM called a QRM Eliminator can be found in some ratio shacks. I thought it would be of interest to further discuss its operation and possible performace Apparently no circuit diagram is supplied with the unit but I have learnt a little about its operation.

A block diagram of the interference cancelling arrangement is shown in figure 2. The auxiliary antenna signal is fed via a phase control network to the gate of an FET stage. The phase of the auxiliary signal is set by the adjustment of two potentiometers in the network. The main antenna is fed via a gain control potentiometer to the gate of a second FET stage. The two adjusted signals are combined by parallel connection of the FET amplifier drains. There is no tuning of any resonant circuits and the amplifiers operate in a broad band mode. Relays are provided to switch out the unit from the main antenna and earth the auxiliary antenna circuit when transmitting.

According to the advertised specification, the mark 2 SEM unit has a frequency range of 100 kHz to

60 MHz. I pointed out in my first article that, to achieve a universal adjustment over a range of frequencies, 360 degrees of phase adjustment was required over all of the frequency range. Just how this is achieved over such a wide frequency range in the SEM unit seems a mystery. I understand that the phase control network is similar to that shown in figure 3.

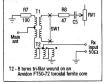


Figure 1 — Modifications to receive input circuit.

A theoretical study of this network for all possible settings of the two potentiometers looked a bit tedious so I made an assessment of its range of

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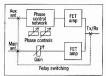


Figure 2 — Block diagram of SEM unit.

phase control by empirical means. I, wired up the circuit of figure 3 and carried out tests with a signal generator fed to the input of the network. Phase shift and attenuation through the network was monitored using a dual trace CRO with one of its inputs connected across the network input and the other across

Whilst various adjustments were accompanied by considerable variation in attenuation. I found that by twiddling the two pots I could achieve 360 degrees of phase variation for a range of frequencies between 1.3 and 18 MHz. This of course covers 18 MHz and the noisiest end of the HF band. I could not achieve a complete 360 degrees of adjustment below 1.3 MHz or above 18 MHz. From this result one conclude that. interference cancellation might be possible outside the range of 1.3 to 18 MHz, complete cancellation might not always be achievable for certain conditions of phase between the two antennas.

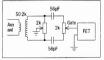


Figure 3 — Phase control network similar to that used on the SEM unit.

I must say that I am not too impressed with the idea of the wide band untuned FET stages. Amplifiers are never perfectly linear and, from my own experience, this provides an invitation for cross modulation by strong signals operating at any

frequency within the range of the amplifier. Noting that the amplifiers are designed for operation down to 100 kHz, there is also the chance of cross modulation by localised noise which often reaches quite high levels in the LF-MF spectrum. There is not much point in cancelling out one lot of noise if, in doing so, another is introduced.

I suggest that if you own one of these units and you experience any form of cross modulation, you might improve its performance by tuning the two antenna input circuits. It might two antenna input circuits. It might only be necessary to tune the auxiliary circuit if adequate pretuning is provided in the main antenna circuit by the ATU or other transmitter matching device.

In my own interference cancelling system, I certainly found pretuning of the auxiliary circuit was necessary to stop the odd birdies. In my case, pretuning the main circuit was

unnecessary because it was not fed via an amplifier stage.

have heard that the untuned FET amplifiers in the SEM unit introduct onticeable inherent noise. Here again is where pretuning the inputs can provide an advantage. Injecting the antenna signal via a parallel tuned circuit provides a signal voltage gain approaching the value of circuit Q and hence the signal to noise ratio referred to the amplifier input is improved by this gain factor.

I must emphasise that my discussion on the wide band amplifier design is given in the light of experience with my own noise cancelling circuits and not on any practical testing of an SEM unit. Further comments would be welcomed from any reader who has had experience with the SEM ORM Eliminator.

* 18 Ottawa Avenue, Panorama, SA 5041

WIA News

One Pizza Supreme, Hold the Anchovies

You might wonder if your 2 m handheld has turned into a cellphone when you hear food orders, weather forecasts and business appointments being relayed via repeaters as you travel the United States in future.

In mid-September last, the Federal Communications Commission (FCC) changed the rules for US amateurs "Relaxing Restrictions on the Scope of Permissable Communications in the Amateur Service".

The new rules permit limited business communications on the ham bands — hence the reference to weather information, business appointments and the ordering of food.

"Fears that the VHF bands would become a pizza ordering service so far appear to half-baked," said the W5YI Report.

old New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of November 1993. 150320 DR R M DOUGLAS L50322 MR L J KELLY VK1MIA MR G NAIRN VK2KDH MR D W HARDING VK2MCC MR C COOL VK2T.I MR I F SIMMONS VK2TRB MR B M BROWN VK2XGM MR G P MAIZELS MR K C BARNES VK2ZKB VK3AUR MR M WIMBOURNE VK3EVK MR A J GILBERT VK3TRK MR R SCHRAPE VK3TRT MR R SMALLWOOD VK5EB MR C J MCCARTHY MR C F MACKINTOSH VK5KDI. VK5ZAI MR J A HUTCHISON VK5ZJP MR J P MALUSA VK6NI B MR C I BAKER VK6YBO MR H WUNDERLICH

VK6ZWY MR J W YEO

VK7ZRJ MR R J GRACE

Amateur Radio Annual Index 1993

What a tremendous amount of absorbing reading was provided in Amateur Radio magazine during 1993, much of it the accounts of WIA members' experiments, construction projects and experiences, and all to do with this most fascinating of all hobbies, amateur radio. If you see an item in this index which

you want to read, and you cannot locate.

or do not have, that particular copy of Amateur Radio, back issues of the magazine are available from the Federal Office to current WIA members at \$4.00 each, which includes postage in Australia.

If a back issue is no longer in stock, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each addditional issue in which the article appears).

And remember. The WIA is always on the lookout for technical and general interest articles from members. Have you submitted your contribution lately? For further details on how to write an article about your latest construction project, or amateur radio experience, for your magazine, please refer to the August 1992 issue of Amateur Radio (page 18), or contact to eeffors at the Federal Office and the property of the property of

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TITLE

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EHECTRONICS

Great technol



FT-5200 2m/70cm Mobile Transceiver

The FT-5200 carries the latest innovations in compact cross-band full- duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full- frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jaks (one for each band). A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 watts on the 70cm band. What's more, scanning features include programmable scan limits, selectable scan resume modes memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are

provided and a FRC-4 DTMF paging/selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional

YSK-1 remote mounting kit lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

General Frequency Range: Channel Steps: urrent Consumption Transmit Dimensions

Receiver

Sensitivity: Image Rejection: Maximum AF Output:

Transmitter RF Output Power Cat D-3310

144-148MHz, 430-450MHz 5, 10, 12.5, 15, 20 & 25kHz Receive: 600mA 2m, 11.5/4.0A (high/low 70cm, 9.0/3.5A (high/low) 140 x 40 x 155mm (w/o knobs)

2m, 17.7MHz & 455kHz; 70cm, 22.5MHz & 455kHz Better than 0.158uV (12dB SINAD) Better than 65dB 3.0W into 4 ohms @ 5% THD

2m - 50/5W (high/low) 70cm - 35/5W (high/low)

2 Year Warranty

\$1499



FT-990 H.F All-Mode Base Transceiver

in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straight-forward operation. The receiver uses a wide dynamic range front-end circuit and two DDS's to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range.

Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed The internal auto antenna tuner and inbuilt AC power supply are

standard features, while the customizable RF speech processor

bandwidth selection, 90 memories and one-touch band selection Cat D-3260 2 Year Warranty

BONUS

Deluxe desk microphone (MD-1), valued at \$199 *Offer extended to 31st January 1994

Deluxe Handheld FM Transceivers

The superb FT-415 and FT-815 hand-held FM tran compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be backlit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has Automatic Repeater Shift (Australian version), which can be activated whenever you tune to a standard repeater sub-band, plus extended receive coverage. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.

FT-415 Cat D-3610 \$599

FT-815 Cat D-3615 \$699 (Limited stocks)

Specifications: Frequency range:

Receiver

Sensitivity:

FT-415 144-148MHz (140-174MHz extended receive) FT-815 430-450MHz 55 x 146 x 33mm

Size Transmitter: Power output: Both models:

FT-415 2.0W (at 7.2V) FT-815 1.5W 5 0W at 12V

better than 0.158uV, (12dB SINAD) both models, Ham bands only



Purchase any 2m or 70cm handheld during January, and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time. Not applicable to dualband or portable transceivers.





FL-2025 Amp

Turn your FT-290RII into a powerful 25watt obile/base transceiver with the FL-2025 amplifier. This clip-on RF amplifier replaces the FBA-8 battery holder on the FT-290RII. Requires 13.8V DC Cat D-2863

\$299

FT-290RII 2M Multi-Mode Transceiver The multi-mode, trans eiver for serious field or mobile operations! The

FT-290RII features FM, SSB (USB/LSB), and CW operation with 2.5W output, twin VFOs and 10 memories. Selectable tuning rates are provided for SSB/CW and FM, while modespecific features such as noise blanker and clarifier control for SSB/CW, plus a full set of functions for FM repeater operation make this unit very simple to operate. Comes with an FBA-8 battery holder for nine "C" size standard or NiCad batteries (not supplied), antenna and hand-held microphone. Cat D-2875

2 Year Warranty

FT-736R VHF/UHF **Base-Station Transceiver**



25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands and can easily be expanded to cover the 6 metre and 23cm (1240-1300MHz) bands as required. Features include keyboard frequency entry, 115 memories, 2 independent VFOs per band, separate FM Channel knob with selectable channels steps, 2 full duplex VFOs for Satellite operation, IF shift and Notch filters, noise blanker, all-mode VOX, SSB speech processor, GaAs Fet front-ends(430, 1200MHz) high-stability TCXO reference oscillator & an inbuilt AC power supply. Microphone optional extra. Cat D-2920

2 Year warranty

\$2995

HURRY! BEAT THE PRICE RISE!

to do it

Great technology from FT-911 23cm

FT-912R 23cm Mobile



Great value! The FT-912R is an easy-to-use, solidly built transceiver that provides 10 watts output on the 23cm band (1240 - 1300MHz), and comes complete with mobile mounting hardware and hand microphone. Features include 21 memories, selectable tuning steps, inbuilt CTCSS encode, various scanning modes, and a large back-lit LCD screen. At this great price, you've got no excuse for not using the vast 23cm band. Cat D-3390

2 Year Warranty

Save \$200 \$799

Handheld

held provides great performance. long battery life, and rugged construction, at an incredibly low Dick Smith Electronics price. If you've been thinking of getting a 23cm hand-held, now's the time The FT-911 provides 1240-1300MHz coverage, 2 VFO's

keypad frequency entry, 7-digit LCD screen, 1000 mA/H NiCad pack, carry case, belt-clip and approved AC charger. Cat D-3380

Save \$200

2 Year Warranty

FT-2400H Rugged 2m 50W Mobile

Our toughest 2m mobile! The FT-2400H is the first 2m amateur rig to meet the USA MIL-STD 810C shock and vibration requirements, so you know you're getting a transceiver that will provide really reliable long-term operation. It's one-piece diecast chassis allows 50W output without forced air cooling, while the large back-lit LCD screen and major controls

are well spaced for easy access. A customised microprocessor also provides selectable Auto Repeater Shift (Australian band plan), plus extended 140-174MHz receiver coverage with a track-tuned front-end and dual FET mixer for improved receiver performance. CTCSS encode, 31 tunable memories, scanning modes, and an MH-26 hand microphone are

also provided. Cat D-3630

2 Year Warranty

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PHONE, FAX & MAILORDER SERVICE & YAESU BROCHURE HOTLINE Outside Sydney (FREE Call) 008 22 6610 Sydney and Enquiries - (02) 888 2105 Fax: (02) 805 1986 or write to Dick Smith Electronics, Mail Orders, Reply Paid 160

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Yaesu stocks and some antennas not held at all stores, please contact your local store for availability, or phone 008 22 6610

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F/W

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Amateur Radio, January 1994

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ALARA

Robyn Gladwin VK3ENX*

YL Contests

There are two DX contests early in the New Year which may interest radio amateurs with time on their hands over the holidays

MEET THE NOVICES AND TECHNICIANS DAY, sponsored by YLRL. the United States YL Association, will be held on Saturday, 15 January 1994 from 1500 to 0500 UTC. All licensed women operators throughout the world are invited to participate. Only frequencies in the HF bands that are open to novices and technicians may be used. A station may be worked once for credit. Net contacts do not count. Frequencies are CW: 21.120-21.150 28.150-28.185 SSB: 28.300-28.500 MHz.

Scoring is as follows:- 3 points for each YL novice or technician worked; 2 points for each YL general or advanced class worked: 1 point for each YL extra class worked. Total score = total number of points. Mail logs to Vice President YLRL. Carla Watson W06X, 473 Palo Verde Drive, Sunnyvale CA94086, USA, Logs must be postmarked no later than 30 days after the contest and must be signed by the operator.

The second contest will be conducted by the British YL association. It is the ELEVENTH BYLARA CONTEST, to be held on two dates:- Thursday, 10 February from 1900 to 2200 UTC and Saturday, 12 February from 1000 to 1300 UTC Frequencies are 14.250-14.280. 21.350-21.400. 28.350-28.410 and 28.650-28.700. Scoring is as follows:- 5 points per YL BYLARA member; 3 points

per YL non-member: 2 points per OM Associate member: 1 point per other OM contact. EACH DAY IS A SEPARATE ENTRY TOTAL. Logs must be received by 4 April 1994. They should be sent to Ella Tugwell G0FIP, 67 Upper Kingston Lane, Shoreham-By-Sea, Sussex BN43 6TG, England.

ALARA has many sponsored members in the US and the UK and it would be great if Australian YLs could support these contests

VLs on the Air

This is the title of the YL column which appears in the US radio magazine "World Radio". The articles are written by Kay Evman WA0WOF. In her August 1992 column she published a poem written by Raymond Cotton W1BTY, almost 40 years ago. I hope that OMs who read the poem may be inspired to encourage their partners to join the wonderful hobby of amateur radio.

My Gal

The final's plates may seem to drip From running too far off the dip: The modulator makes with chatter

For loading is a minor matter. The bath's hung full with lingerie

That somehow wasn't put away: I don't ask why, "cause I can guess This was her day as NCS. My wilted shirt will have to do

Me. for another day or so. "I would have fixed one for you, pet, But today the YL ham club met."

Tonight I dined on beans and bread. Did the dishes, made the bed: She'd taken off just after dawn To get the CD station on

But when I spend a wad of cash On mobile gear and such like trash That might have bought an evening dress Or a new coat - sure, nothing less

She smiles and strokes her VFO And says in voice both sweet and low.

"Its okay, dear, the old things will do." God bless her soul - she means it, too! And when I sit up till the dawn.

When the annual SS is on. She never scolds or spoils my plans

Because the good gal understands. So I've no cause the day to rue

I taught her the code and theory, too. We now see all things eye to eye; A lovely gal, a lucky guy.

PO Box 438 Cheisea 3196



AMSAT Australia

Bill Magnusson VK3JT*

National co-ordinator Graham Rateliff VKSAGR Packet: VKSAGR@VKSWI AMSAT Australia net: Control station VKSAGR Bulletin normally commences at 1000 UTC, or 900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15

minutes prior to the bulletin.
Frequencies (again depending on propagation conditions):
Primary 7064 MHz (Usually during

summer).
Secondary 3.685 MHz (Usually

during winter).
Frequencies +/- 5 kHz for QRM.
AMSAT Australia newsletter and softcare service.
The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL.
It is payable to AMSAT Australia

addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001

SATELLITE

Welcome in the New Year

By now you will all have welcomed in the new year, hopefully in a way beneficial to your amateur radio satellite activities. I'd like to be able to give you a run-down of our efforts at Mt Skene but that'll have to wait until next month as this is being written in November due to the deadline.

Moon-bounce Tests

I wonder if anyone else heard the signals from Algoquin via EME. Bay VK3YPY and I sat up until the wee small hours and heard the 70 cm signals on the Saturday night. However, despite twice the antenna gain on 1296 MHz, we heard nothing on the next night.

APRS

DOWNLINK (MHz)

UPLINK (MHz)

I'm still collecting info on this subject. I have been offered a copy of the program by our local sysop who found it in his BBS files so, hopefully, I'll have more to report next month.

SATELLITE

"S" mode

I had my first QSO on OSCAR-13 mode "5" the other day, Predictably a JA. Good signals from a horne brew converter (no pre-amp) and a copy of James Miller's "minimum helix" as described in various magazines. The system works well and I'm looking forward to using it in a (very) portable situation. The eclipse season means that squint angles are going to be ablingh for a month or so but, even so, signals are more than adequate. Pity that counts. Not along is a pre-amp at the feed point and maybe a longer helix. (To balance the 70 cm beam +lift).

Current Amateur Radio Satellite Status

As promised, here is a list, to the best of my knowledge, of the frequencies of all the currently operational amateur radio satellites. Please do not hesitate to make me aware of any inaccuracies or omissions.

LIPLINK (MHz)

DOWNLINK (MHz)

Oscar 10 (AO-10)			Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
General Beacon (Carrier only)		145.810	Robot Mode A (CW)	145.83	29.407 or 29.453
Engineering Beacon (irregular and g	arbled)	145.987	Beacon/Robot (CW)		29.407
Mode B (SSB.CW-Inverting)	435,030-435,180	145.825-145.975	Beacon/Robot (CW)		29.453
Note: AQ-10 is out of control but still p	rovides good communica	tions via mode "B" when	Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
the batteries are charged by the solar ce	lls.		Robot Mode K (CW)	21.130	29.407 or 29.453
Oscar 11 UoSAT-2 (UO-11)			Beacon/Robot (CW)		145.907
Beacon (1200 AFSK, FM)		145.826	Beacon/Robot (CW)		145.953
Beacon (1200 AFSK, FM)		435.025	Mode T (SSB,CW-Inverting)	21.210-21.250	145.91-145.95
Beacon (1200 AFSK, FM)		2401.500	Robot Mode T (CW)	21.130	145.907 or 145.953
Note: UO-11 has recently returned to	service after a short shu	t-down during which time	Radio Sputnik 12 (RS-12)		
new soft-ware was uploaded. It is current	tly being reconfigured by	Surrey.	Beacon/Robot (CW)		29.408
Radio Sputnik 10 (RS-10)			Beacon/Robot (CW)		29.454
Platform = COSMOS 1861			Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
Beacon/Robot (CW)		29.357	Mode A (CW)	145.831/.840	29.408 or 29.454
Beacon/Robot (CW)		29.403	Beacon/Robot (CW)		29.408
Mode A (SSB, CW-Inverting)	145.86-145.90	29.360-29.400	Beacon/Robot (CW)		29.454
Robot Mode A (CW)	145.82	29.357 or 29.403	Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
Beacon/Robot (CW)		29.357	Mode K (CW)	21.129	29.408 or 29.454
Beacon/Robot (CW)		29.403	Beacon/Robot (CW)		145.912
Mode K (SSB,CW-Inverting)	21.160-21.200	29.360-29.400	Beacon/Robot (CW)		145.959
Robot Mode K (CW)	21.120	29.357 or 29.403	Mode T (SSB,CW-Inverting)	21.210-21.250	145.910-145.950
Beacon/Robot (CW)		145.857	Mode T (CW)	21.129	145.912 or 145.959
Beacon/Robot (CW)		145.903	Radio Sputnik 13 (RS-13)		
Mode T (SSB,CW-Inverting)	21.160-21.200	145.86-145.90	Beacon/Robot (CW)		29.458
Robot Mode T (CW)	21.120	145.857 or 145.903	Beacon/Robot (CW)		29.504
Radio Sputnik 11 (RS-11)			Mode A (SSB,CW-Inverting)	145.96-146.00	29.460-29.500
Platform COSMOS 1861			Mode A (CW)	145.84	29.458 or 29.504
Beacon/Robot (CW)		29.407	Beacon/Robot (CW)		29.458
Beacon/Robot (CW)		29.453	Beacon/Robot (CW)		29.504

SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)	SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)
Mode K (SSB,CW-Inverting)	21 260-21 300	29 460-29 500	Mode .I	144.30-144.50	
Mode K (CW)	21.138	29.458 or 29.504	ATV (TV.AM)	1265,000	
Beacon/Robot (CW)		145.862	AMSAT-OSCAR-19 (LO-19) (Lusat)		
Beacon/Robot (CW)		145.908	(1200 AFSK.FM-SSB)	145.84/86/88/90	437.15355 or 437.1258
Mode T (SSB,CW-Inverting)	21,260-21,300	145,960-146,000	FUJI-OSCAR-20 (JAS-1b) (FO-20)		
Mode T (CW)	21.138	145.862 or 145.908	Beacon JA (CW, Analog)		435.795
AMSAT-OSCAR-13 (AO-13)			Mode JA (SSB.CW)	145.90-146.00	435.80-435.90
General Beacon (400 BPSK,CW,50 Baud RTTY) 145,812		145.812	Beacon JD (CW)		435.910
Engineering Beacon (PSK,CW,RTTY)		145.985	Mode JD (1200 BPSK,FM-SSB)	145.85/.87/.89/.91	435.910
Mode B (SSB.CW-Inverting)	435.420-435.570	145.825-145.975	OSCAR-21 (AO-21), Radio Sputnik 14 (RS-14)		
General Beacon (400 BPSK.50 Baud RTTY) 435.651		435.651	Beacon (CW)		145.822
Engineering Beacon (PSK,RTTY)	,	435.677	Beacon (BPSK,FM)		145.952
Mode J (SSB,CW-Inverting)	144.423-144.475	435.940-435.990	Beacon (BPSK,SSB)		145.983
Beacon (PSK,RTTY)		2400.325	Mode B (SSB,CW-Inverting)	435.022-435.102	145.852-145.932
Beacon (PSK,RTTY)		2400.664	Rudak 2 (A/BPSK.FM)	435,016/,155/,193	145.983 or 145.987
Mode S (SSB,CW,FM)	435.601-435.639	2400.711-2400.747	Rudak 2 (Various Modes)	435,041	145.983 or 145.987
Mode Rudak	1269.71	435.677	Beacon (CW)		145.948
Note: Mode "L" is no longer operational on AQ-13.			Beacon (BPSK,FM)		145.838
UOSAT-OSCAR-14 (UO-14) (Taken out of amateur service)			Beacon (BPSK,FM)		145.800
Note: This (Surrey) satellite is now given over to the "SatelLife" organisation and is being			Mode B (SSB.CW-Inverting)	435,043-435,123	145.866-145.946
used to deliver humanitarian medical aid to developing countries, DO NOT attempt to			UOSAT-OSCAR-22 (UO-22)		
communicate with or via this satellite. It is no longer available to the amateur service and the			Mode JD (9600 Baud FSK,FM)	145.90/.975	435.120
amateur transponders have been turned off.			KITSAT-OSCAR-23 (KO-23)		
AMSAT-OSCAR-16 (AO-16) (Pacsat)			Mode J (9600 BPSK BBS)	145.85/.90	435.175
Mode J (1200 BPSK BBS,FM-SSB)	145.90/.92/	437.025	KITSAT-OSCAR-25 (KO-25)	145.870	435.175
	or .94/.96	437.050		145.980	436.500
Mode S (1200 BPSK BBS,FM-SSB)		2401.1 or .1428	ITAMSAT-OSCAR-26 (IO-26)	145.875	435.867
AMSAT-OSCAR-17 (DO-17) (Dove)				145.900	435.822
Beacon 1 (1200 bps AFSK,Digital Voice,FM) 145		145.82516		145.925	
Beacon 2 (1200 bps AFSK,Digital Voice,FM)		145.82438		145.950	
Beacon 3 (1200 BFSK, Digital Voice, SSE	3)	2401.2205	AMRAD-OSCAR-27 (AO-27)	145.850	436.800
AMSAT-OSCAR-18 (WO-18) (Webersat)			POSAT-OSCAR-28 (PO-28)	145.925	435.250
Mode J (1200 BPSK,RC,SSB)		437.075 or 437.10		145.975	435.275

The ARSENE satellite has failed and has been removed from the list.

The last four satellites are new and are currently in various phases of commissioning. Their technical make-up is quite complex. I will feature them one by one in complete detail each month in future columns.

*359 Williamstown Rd Yarraville VIC 3013

Packet: VK3JT @ VK3BBS

WIA News

Publicity for JOTA

The Queensland Sunshine Coast Weekly carried a story and photograph on Jamboree of the Air (JOTA) activities at Woombye in the last week of October. Headed "Scout groups talk via satellite": the story told how the JOTA opening address was broadcast round Australia using the Optus

satellite.

The paper opened the story with a strong link between amateur radio and the scouts and guides, saying, "The Jamboree of the Air is the largest event in the annual

calendars of the scout and guide movements and the Amateur Radio fraternity — especially in Australia "

Woombye Rover Advisor and amateur, lan Hart (no callsign quoted), was credited with organising Woombye Scout Group's participation and supplying the equipment. The picture accompanying the story showed lan with a very young showed lan with a very young

scout cub.
"Many long conversations were had by the Woombye youth with members of groups from Noosa,

Mapleton, Caloundra, Loganlea (Brisbane), Ballarat (Victoria), Guildford (Sydney) and Cradle Mountains (Tasmania),'' the

Sunshine Coast Weekly reported.
All good, positive publicity for amateurs and amateur radio involvement in the community. Remember, it's always good to contact you local media wherever you have an event of this sort, a club function, a field day could have an event of this sort, a club function, a field day much to disple public mistrust and misunderstanding of "those untalCoars with the radios."

John Kelleher VK3DP — Federal Awards Manager*

Happy New Year to all. Your interest and encouragement has allowed me to achieve success during this past two and a half years. Please keep it up, as I relish the thought of providing more service to you in the future. Some long standing and Honour Roll members have personally thanked me for my efforts.

On the subject of DXCC upgrades. The same message keeps coming up. "It has same message keeps coming up. "It has same message keeps coming up. "It has taken a long time to finally gather these ten plus countries." In this present period of depressed DX activity, IWILL ACCEPT ANY NUMBER OF ADDITIONAL COUNTRIES to upgrade your totals, and to keep you on the active DXCC listings. I have found it necessary to transfer quite to keep you on the active DXCC listings. I have found it necessary to transfer quite to upgraded their active totals since 1 December 1987, or their totals have dropped below 100 due to deletions, etc.

So, if your callsign is not shown in the next DXCC listings, which should be published next month, then that is the reason why.

Canadaward

Confirm two-way contact with all Canadian Provinces and Territories. Endorsements for any band 6 to 160 metres, and on any mode via Oscar satellite. Modes may be Mixed, all CW, SSB, or RTTV, Contacts after 1 July 1977 quality. Send cards OR GCR list, plus US\$8.00, or 10 IRC to.... CARP Awards Manager PO Box 356, Kingston, Ontario, Canada K7L 4W2. Provinces and Territories needed are... VO11/VO2 Newboundland & Labrador

VO1/VO2 Newfoundland & Labrado VE1 Prince Edward Island VE1 Nova Scotia VE1 New Brunswick VE2 Quebec

VE3 Ontario VE4 Manitoba VE5 Saskatchewan VE6 Alberta

VE7 British Columbia VE8 North West Territory

VY1 Yukon Territory

Stampede City Award

Contact 10 stations in the City of Calgary, Alberta, after 1 January 1962. All Calgary ARA members qualify. All bands and modes. A contact with VE6AO, AP, GO, HE, MX, NO, RH, RO, SA, VK, VO and VE7DE, OK count double points. The award is free, but please include sufficient return postage. Apply with log extract to

Russ A Wilson VE6VK, 1235 Richland Road NE, Calgary Alberta Canada T2E 5M5.

The Canary Islands Diploma

Work 10 different EA8 stations since 29 April 1971. GCR list plus 15 IRC, or equivalent to Diploma Islas Canarias, Apartado 860, Las Palmas de Gran Canaria, Canary Islands.

Copenhagen Award

Contact 5 stations in the Copenhagen area. Available for CW, SSB or Mixed. All bands. SWL OK. GCR list and 5 IRC to Allis Anderson OZ1ACB, Kagsaavej 34, DK-2730, Herlev Denmark.

The J28 Award

Contact J28 stations after 27 June 1977. Expedition and other special callsigns are acceptable. For 1st Class award, contact 8 stations in Djibouti on any modes, but on two bands. For 2nd Class award, 15 QSOs on at least 2 bands, 5 of which must be CW. The same station may be

QSP News

160 Metre "Have a Go" Activity

Hastings Branch of the NZART (the New Zealand sister society to the WIA) is arranging this recreational activity again this year.

Use this non-competitive opportunity to experiment with aerials and populate the 160 m band. Try a group effort.

In previous years this event has proved very popular without problems of band crowding. Based on previous years experience, DX results are likely.

CW or LSB on approx 1840 kHz from 2000 NZT on 18 March 1994 to 0200 NZT on 19 March 1994; and the same times 24 hours later.

If you want more information, contact David Walker ZL3DK, 36 Ardrossan Avenue, Flaxmere, Hastings, NZ. counted once on each band. GCR list and a fee of US\$6.00 to Award Manager J28DM, ARAD, PO Box 1076, Djibouti, Diibouti Republic.

DXCLA

For the Short Wave Listeners, from the Radio Society Great Britain (RSGB) we have the DX listeners Century Club (DXCLA). This sward can be claimed by any SWL who can produce evidence of having received signals from amateur radio stations located in 100 plus DX countries. The fee is US\$4.00. Applications go to Awards Manager, SEmilyn-Jones GW4BKG, PO Box 20, Bridgend, Mid-Glamorgan CF35 6EP. United Kingdon,

Special Event

V73AX, commemorating the 50th anniversary of the Battle for Kwajalein Atoll, operating from the Kwajalein Atoll, operating from the Kwajalein Amateur Radio Club, Republic of the Marshall Islands, during 1745 UTC 31 January 1936 to 1920 UTC 5 February 1954: SSB, CW and RTTY on HF and 6 metres; conditions permitting, For QSL, send your QSL and SASE or IRC to KARC, PO Box 444, APO AP 9655, USA.

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Amateur Radio, January 1994

Club Corner



The "hounds" line up at the start of the one of the BARG Hamvention "fo hunts".

BARG Hamvention '93

Isn't it a great feeling when you plan to do something on a grand scale and when you carry out the task everything just falls into place in line with the details that you have spent weeks sorting out and arranging?

Tom (VK3DMK) must have experienced that great feeling on 31 October at the Bray Raceway in Ballarat.

You see, Tom was the Co-Ordinator for the BARG Hamvention which proved to be an outstanding success, due in no small measure to the many weeks of effort he put in planning and arranging the details. Of course Club Members also pitched in to help out, and what a magnificent effort by the XYL's who catered for the scrumbious lunch.

The writing was on the wall on the Sunday morning when we woke up, for the WX could not have been better for the occasion. We should not have been concerned of course because after all this is Ballarat, and it's renowned for its WX.

930 other radio orientated people must have agreed with our prediction, as they started to roll up as soon as the gates opened, and what a great day they had!

The 8 commercial tables were set up with all of their goodies, the 25 private tables had an amazing array of pre-loved "bitz'n pieces", the coffee was on tap and the foxhunting hounds were straining at the co-ax ready to pursue the hapless fox.

Train travellers had been picked up at the station and brought to the venue and VK3RBA was busy as travellers called in for directions to the venue. The BARG Hamvention was in full swing.

All day the fervour continued as mate greeted male and new mates were welcomed, but QSOs really took hold over the funch tables in the well appointed dining area. Sausages and hamburgers cogether with appropriate trimings and a dessent were gratefully consumed, and a dessent were gratefully consumed, and with the performance of that new rig or antenna was excilled into the receptive ear of a willing listener.

Meanwhile, at the commercial and preloved tables, housekeeping budgets took a hammering as that elusive piece of gear that "I've wanted for ages" or "I reckon I can get going" or "Joe's got one of these

— they're great" disappeared into coat pockets or the boot of the car so it would be out of sight of the XYL until it could be furtively positioned on the bench in the shack so that it looked like it had been there for years.

And yet at the end of this great day I couldn't help feeling sorry.

I felt sorry for those who, for whatever reason, couldn't get along to share this wonderful day with us. But never mind, rest assured that it's on again next year, for sure, and Tom and the Club are determined that the BARG Hamvention for 1994 will be BIGGER and BETTER than ever. Put it in your Diary NOW! Norm VK3LBA

Publicity Officer BARG

1994 Gosford-Central Coast Field Day

The Gostord Field Day is one of the longest running events in the Australian amateur radio calendar. The next Gostord Field Day will be held on Sunday. 27 February 1994 at Wyong Racecourse and this will be the 37th year of this popular and growing event.

As usual the large contingent of well known suppliers of electronic equipment, components and books will be attending. These companies will have their latest products on display and many traders will have items on sale at very special Gosford Field Day prices.

Last year the popular "Flea Market" attracted a large number of people who traded an enormous amount of surplus electronic equipment to eager buyers from trestles, their trailers or from the boot of their car. The organisers expect the flea market to boom with even more vendors than last year.

The organisers, the Central Coast Amateur Radio Club Inc. have kept the format for the field day in line with the changing face of amateur radio. In recent years seminars on a wide range of topical subjects, ranging from packet radio to satellite communications, have been a popular attraction. This year an even bigger program of interesting lectures and equipment displays has been arranged. Some attractions however have remained unchanged and ever popular. Among these is the so called disposal sale of thousands of new and used items of surplus equipment, many bargains going up for grabs. This year the minimum value of \$20 per lot will apply to disposals sales

More than two thousand people attended last year's Gosford Field Day. The next one at Wyong racecourse will be bigger and better than ever, so mark 27 February 1994 down in your calendar now! Gates will open at 9.00 am in wet or fine weather and all displays are under cover.

Bob Fitzgerald VK2XRF, Publicity Officer

Sign up a new WIA member today — we need the numbers to protect our frequencies and privileges.

Contests

P Nesbit VK3APN — Federal Contest Coordinator*

Contes	t Calendar Jan — Ma	r 94
Dec 26/	Jan 16 Ross Hull Memorial	(12/93)
Jan 1	ARRL Straight Key Night	(12/93)
Jan 1/2	ARRL RTTY Roundup	(12/93)
Jan 15/16	VHF/UHF Field Day	(12/93)
Jan 16	HA DX CW Contest	(12/93)
Jan 28/30	CQ WW 160 m CW Contest	(12/93)
Jan 29/30	UBA (Belgium) SSB DX Contes	
Feb 12/13	PACC CW/SSB DX Contest	
Feb 12/13	Spanish RTTY Contest	
Feb 19/20	ARRL DX CW Contest	
Feb 25/27	CQ WW 160 m SSB Contest	(12/93)
Feb 26/27	RSGB 7 MHz CW Contest	
Feb 26/27	UBA (Belgium) CW DX Contest	
Mar 5/6	ARRL DX SSB Contest	
Mar 12/13	BERU CW Contest	
Mar 19/20	WIA John Moyle Field Day	
Mar 19/20	Bermuda Contest	
Mar 40/00	DADTO DTTV Contest	

Here we are at the start of another year. I hope everyone is having a pleasant Christmas break, and managing to remember the family in the midst of antenna refurbishment, contests, DXing etc. The reference to "antenna refurbishment" is actually a gentle reminder because, like many people, I tend to put antenna chores off until two weeks before the big one, then I decide there's too much to do and put it off for the following year. Using this technique. one can defer antenna refurbishment almost indefinitely, at least until the system falls down or the house is sold. This is, of course, definitely not the right attitude.

Mar 26/27 CO WPX SSB Contest

After all, when our favourite contests are on, we warn the family in advance, put off social engagements and, unless something life threatening happens, we commit ourselves to the contest. This means spending up to 48 hours in the shack, losing sleep, not eating properly, using heaps of electricity, and generally convincing the family that at best we are eccentric, and at worst complete social misfits. Well, if we are going to suffer all this, at least make it worthwhile! This means doing those antenna chores now, including anything else which makes your station more competitive. Try and avoid doing what one top overseas contester planned to do recently, which was to erect two towers, put up a 40 m beam, a vertical, extra dipoles/slopers, and organise a multiop effort only a week before the CQWW contest! Even assuming such things are possible, the drain on one's physical and mental resources

before a big contest is definitely not recommended.

Many thanks to the following for help, information, and inspiration: VK2BQS, VK6NK, VK3AW, CQ, QST, and Radio Communications. Please keep the letters coming, including any spare copies of results. Until next month, good contestingl, 22

Peter VK3APN

Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April Amateur Radio.

UBA SSB/CW HF Contest SSB: 1300z Sat to 1300z Sun, Jan 29-30

CW: 1300z Sat to 1300z Sun, Feb 26.27 This contest runs on the last full weekend of Jan and Feb each year (SB & CW respectively). Any station may work any other worldwide. Categories are: single operator (single & all band); multioperator single transmitter; ORP max 10W O/P: SWL. Frequencies: CW 3500-3560, 7000-7035, 14000-14060, 21000-21060, 28000-28060; SSB 3600-3650, 3700-3800, 7040-7100, 14125-14300, 21175-21505, 28400-28700.

Exchange RS(T) plus serial number. Belgian stations will add their province code. Score 10 points for contacts with Belgian stations, 3 points with other European stations, and 1 point with others. The multiplier is the total of Belgian provinces, Belgian prefixes, and European countries. Total score is GSO points times multiplier. Send log, summary sheet, declaration etc. within 30 days to: UBA HF Contest, Oude Gendarmeristrata 62, B-220 Heist Op Den Berg, Belgium. Logs on disk in KIEA or ASCII format also welcome.

PACC CW/SSB DX Contest 1200z Sat 12 to 1200z Sun. Feb 12-13

The PACC is another popular European contest, with phone and CW held on the same weekend. The object is to work as many Dutch stations as possible on 160 to 10 m, excluding the "WARC" bands. Use CW only on 160 m. Stations may be worked only once per band, regardless of mode. Categories are single and multi-operator; SWL.

Exchange RS(T) plus serial number. Dutch stations will also send a 2 letter code indicating their province. Possible codes are: DR FR GD GR LB NB NH OV UT FL ZH ZL. Score 1 point per Dutch QSD. Final score is total QSD points times total Dutch provinces worked on each band (max 72), Mail logs by 31 Mar to: PACC Contest, PO Box 499, 4600 AL Bergen op Zoom, The Netherlands. Certificates will be awarded to the top scoring stations in each category, in each country and call area of VK. ZL etc.

Spanish RTTY Contest

1600z Sat to 1600z Sun, 12/13 Feb The object is to contact as many stations worldwide as possible, on RTTY, 80 to 10 m. Categories are single operator (single/multiband); multioperator single transmitter; SWL.

transmiturer; SWL.

Exchange signal report and CQ zone.

Spanish stations will send signal report
and province. On 10/20 m score 1 point
per GSW will state points with stations.

Outside your WQ continent. On 40 and
80 m, the GSO points are tripled. GSOs
between stations in the same country can
be claimed for multiplier credit, but not
(SSO points. The multiplier is the sum of
the DXCC countries and Spanish
provinces (max 52) per band. The final
score is the total QSO points times the
multiplier.

A Call to all Holders of a Novice Licence

Now you have joined the ranks of amateur radio, why not extend your activities?

The Wireless Institute of Australia (NSW Division) conducts a Bridging Correspondence Course for the AOCP and LAOCP Examinations.

Throughout the Course, your papers are checked and commented upon to lead you to a successful conclusion.

For further details write to: The Course Supervisor WIA

PO Box 1066 Parramatta NSW 2124 (109 Wigram Street, Paramatta) Phone: (02) 689 2417 Fax: (02) 633 1525

11am to 2pm Monday to Friday 7 to 9pm Wednesday

Send log, summary, declaration, by 9 April to: EA RTTY Contest, c/o EA1MV Antonio Alcolado, PO Box 240, 09400 Aranda de Duero (Burgos), Spain,

ARRL DX Contest

CW: 0000z Sat to 2400z Sun. Feb 19-20. SSB: 0000z Sat to 2400z Sun, Mar 5-6

The CW section of this contest is on the 3rd full weekend in February each year. and the phone section on the 1st full weekend in March. The object is to work as many W/VE amateurs as possible on 1.8-30 MHz. Categories are single operator (single band, all band, all band QRP max 5 W O/P, and all band assisted); Multioperator (single TX, two TXs, and unlimited). In the single and 2 TX categories, once a transmitter has begun operation on a band it must remain on that band for at least 10 minutes. Listening time counts as operating time.

Exchange RS(T) and a 3 digit number indicating approx output power. W/VE stations will send RS(T) and state/province. Score 3 points per W/VE QSO. The multiplier is the sum of US states and District of Columbia (DC) (except KH6/KL7), NB (VE1), NS (VE1), PEI (VE1 or VY2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NWT (VE8), YUK (VY1), NF (VO1), and LAB (VO2) worked to a maximum of 62 per band. The final score equals the total QSO points times the multiplier.

Entries with more than 500 QSOs must include crosscheck (dupe) sheets. Logs on DOS disk are welcome. Include a paper summary sheet showing usual info Multioperator entries must list all operators. Entries must be postmarked by 6 April 1993 or will be classed as checklogs (no exceptions)! Mark the envelope CW or phone and send the log to: "ARRL Contest Branch, 225 Main Street, Newington, CT 06111, USA". Certificates will be awarded to the top scoring stations in each country and category, and plaques to the top worldwide and continental stations.

RSGB 7 MHz CW Contest

1500z Sat to 0900z Sun. Feb 26-27 1993. The object of this contest is to contact as many British Isles stations as possible on 40 m CW. Exchange RST plus serial number starting at 001; UK stations will add their county code (see this column Sept 93 for list). Oceania stations score 30 points per QSO, and the final score is the total QSO points times the number of UK counties worked. Include a summary sheet showing all standard details, plus a checklist if more than 80 QSOs are

made. Send logs to arrive by 18 April 1993 to "RSGB HF Contests Committee, c/o S. V. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF. England". Airmail is recommended, as late logs may be treated as check logs. Certificates will be awarded to the leading entrants in each overseas section.

Results of 17th West Australian Annual 3.5 MHz Contest

CW		SSB	
VK6AFW	3520	VK6WJH	14250
VK6BN	3222	VK6XG	13528
VK6AF	2970	VK6BN	8576
VK6XG	2096	VK6RG	4172
VK6BWI	1780	VK6YY	3521
VK6ARI	1620	VK6AR	3096
VK2AYD	1026	VK6KRA	2736
VK2QF	720	VK6SMH	2054
VK6RG	684	VK5UE	378
VK4OD	672	L40018	120
VK3XB	504		
VK4XW	420		
VK5UE	150		

Conditions for both contests were very good with some DX. The combination of both contests in conjunction with the VK4 Jack Files Contest encouraged more activity from the other states. A very pleasing result.

More participation by VK6 stations would have been appreciated by all especially for the SSB contest "so how about it for the next time", it's a very friendly contest of only 3 hours duration.

Results of 1993 World Wide **ANARTS Contest**

Participation this year was higher than last, with logs up 62%. Logs averaged 109 QSOs each, and the total QSOs recorded was 5115. Approx 450 to 600 stations exchanged numbers in the contest, including only 12 VKs! The standard of logs was very high, and the efforts of some stations who were unable to obtain a copy of the Points Table were outstanding. One in particular had tabulated what information he had so carefully that his log was easier to check than many who had full facilities available! However, some difficulties still arose, and many scores had to be adjusted, although not to the extent of affecting Certificates.

Some comments from operators: Great contest! Sure wish I had even heard Africa (K7WUW)... Band conditions bad year by year, but enjoy contest very much every time. I really want more VK participants (JA3DLE/1)... It is a very friendly contest (SM6BSK)... 73 & QRO to all HAMS and SWLs in VK (ONL383)... Am probably the first China station in ANARTS contest (BT2000BJ)... Had fun; it was a great contest but conditions were very poor (W9FFQ)... Weather wet and windy, open wire feeder broke Saturday, repaired on Sunday in rain, but Sunday evening the centre link broke and it fell

down. Never mind, there is always next vear (G4SKA)... We hope to see you and your friends next year.

73. Jim VK2BQS r)

-		Cliff Waterman					st Manage
	allsion 1	993 World Wi Total Pts	de ANAF		est Res		VK Bonus
	ssification A:			USO PIS	Mult	Conts	VK Bonus
1.	VK2KM*	4,487,616	224	8904	84	6	2250
2.	UL9P	1,928,580	196	3030	106	6	1500
3.	OH2LU	1.673.202	235	2343	119	6	300
4.	VK5HB	1,619,700	135	5399	60	6	300
5.	4X6UO	1,273,032	194	3166	67	5	300
6.	JA3DLE/1	1,206,000	142	3540	68	5	2400
7.	AB5KD	1,037,712	230	2188	79	6	600
8.	KBUNP	964,664	237	2264	71	6	200
9.	W1BYH	824,676	173	2081	66	6	600
10.	SV2BFN	813,540	163	3188	51	5	600
11.	KA5CQJ	629,954	240	1719	61	6	800
12.	AH6JF	625,460	132	2599	48	5	1700
13.	VC7SAY	525,790	196	2283	46	5	700
14.	YU7AM	494,625	119	1521	65	5	300
15.	VK6GOM	490,728	99	2921	42	4	-
16.	G5LP	467,934	140	1321	59	6	300
17.	BT2000BJ	324,792	98	1842	44	4	600
18.	SM6BSK	248,080	77	645	64	6	400
19.	W2JGR/0	239,695	104	1113	43	5	400
20.	G4SKA	218,960	89	841	52	5	300
21.	GM0/WN1J	213,392	104	658	54	6	200
22.	K7WUW	212,225	88	1145	37	5	400
23.	SM5FUG	202,365	77	859	47	5	500
24.	WA8FLF	165,250	69	785	35	6	400

_	1993 W	orld Wide ANA	RTS Co	ntest Res	sults (c	ontinue	d)
C	allsign	Total Pts	QSOs	QSO Pts	Mult		VK Bonu
Cla	ssification A:	Single Operator					
25.	A45ZW	145,700	51	910	40	4	100
26.	SP3SUN	128,325	52	625	41	5	200
27.	ZL2JON	115,200	39	1140	25	4	1200
28.	KI4MI	111,980	76	621	36	5	200
29.	JA3BSH	48,424	26	667	18	4	400
30.	W9FFQ	44,935	46	389	23	5	200
31.	VE7VP	40.080	31	470	21	4	600
32.	VK2BQS	39,368	26	703	14	4	
33.	ON5SV	35,832	45	262	34	4	200
34.	WA4MCZ	25,320	20	314	16	5	200
35.	VK2CTD	10.494	16	318	11	3	
36.	SP3BGD	10,000	11	198	10	5	100
37.	OM3CPS	9,126	22	169	18	3	
38.	OH6UP	2,806	13	82	11	3	100
39.	DF5BX	384	12	32	12	1	
Che	ck Log: LA9F	FA					
Cla	ssification B:	Multi Operator					
1.	VK2RT*	4,836,000	300	12090	80	5	
2.	VE3FJB	1,366,844	253	3076	74	6	1100
3.	WF5E	220,660	129	1024	43	5	500
4.	OM3RJB	28,790	32	334	17	5	400
Cla	ssification C:	Short Wave Liste	ner				
1.	ONL383*	639,480	156	1210	88	6	600
2.	ONL4335	86,500	76	384	45	5	100
3.	ONL3997	60,940	75	338	45	4	100
4.	DE0GMH	13,992	29	159	22	4	

*World Plaque Winners

Certificates were awarded to the 1st, 2nd and 3rd placegetters in each country. The few who miss out will receive "Participation Certificates" in appreciation for their entry.

miss out	will receive "Pa	rticipatio	in Cer	tifica	ites" in apprecia	ation for their	entry.	
	of 1992 IA	RU W	orld		VK2NV	17,328	76	76 A
HF Cha	mpionship				VK8BE	2,280	38	20 A
Call/Score	e/QSOs/Mult/C	ategon			VK6HG	10,788	116	31 40
	B = phone, C =			an)	VK3APN	3,864	56	23 40
	D - priorie, O -	OVE, D -	muiti	JPJ	VK4TT	27,183	221	41 20
VK2APK	584,218	1023	118	C	VK4XA	75.852	516	49 10
VK2AYD	169,998	408	87	С				
VK2AYK	137,724	414	69	Α	Phone			
VK4TT	12,954	164	17	C		040 450	4570	405 4
VK6AJ	109,311	277	83	C	VK5GN	918,450	1570	195 A
VK6ANC	(VK6s JIP, T	KR. TV	(A)		VK3DZM	12,342	121	34 80
	93,692	276	59	D	VK3EW	123,090	746	55 40
VK6BWI	1,188	24	11	C	VK2VM	3,366	51	22 40
VK8AV	146,124	390		č	VK2GAH	79,713	521	51 10
P29DX	801,600	1392	120		VK8BE	5,538	71	26 10
				_	P29DX	182,589	503	121 A
Results	of 1993 Al	RRL D	x					

Results of 1993 ARRL DX Contest

Single band leaders for Oceania are VK4s TT & XA (20 & 10 m CW respectively), and VK3s DZM & EW (80 & 40 m phone respectively). VK2APK was 6th world outright on DX Low-Power CW.

(Call/Score/QSOs/Mult/Band)

(Call/Score/QSOs/Mult/Band) VK2APK 1,074,708 1674 214 A VK8AV 532,170 1095 162 A

Phone (Multioperator)

VK1DX (VK1s PJ, ST; VK2s ILK, IVK) 661.878 1442 153

Results of 1993 ARRL RTTY Roundup

Call/Score/QSOs/Mult/Hours VK4SSB 1,134 54 21 24 VK8BE 84 14 6 24 ar

Have you advised the WIA Federal Office of your new callsign? Use the form on the reverse side of the Amateur Radio address flysheet.

QSP News

World Fox Hunting Championships 1994

The world amateur radio direction finding contest will be held in Loka Brunn, Sweden during the week starting 12 September 1994, under international rules.

The organisers are the IARU Region 1 committee.

The first Region 3 contest was held in China early in October 1993. A two member Australian team, VK4CAU and VK4DO, took part in the old timers section, coming fourth in both the 2 metre and 80 metre events. Frank VK4CAU was fourth in the 80 metre individual section.

A total of 57 competitors from nine countries took part in the events in rather rough terrrain. A seminar on "radio sport" will

be held near Brisbane early next year to promote the sport.

Any enquiries, or a request for a copy of the rules, should be sent to Wally Watkins VK4DO, PO Box 432, Proserpine QLD 4800.

VK3OT Century on Six

Steve Gregory VK3OT has done it again! Not EME this time, but QSOs on 6 metres to the Antarctic ice-cap.

This gives Steve officially 100 countries on 6 metres, so he becomes the first VK station to make DXCC on this band.

The contacts made during the DX opening on 19 November 1993 were with Mark VK0AQ (whose home call is VK5AVQ) located at Casey Base. Mark also worked VK3LK and VK5NC. All stations reported heavy QSB with signals from S1 to S5 on 50.12 MHz SSB.

(Steve also has a letter of appreciation in the Over to You column elsewhere in this issue. Ed.)

Divisional Notes

Forward Bias — News from the VK1 Division

Christopher Davis VK1DO

I hope that all our local amateurs have had an enjoyable Christmas break and are ready to implement their numerous and radical new year's resolutions. I trust, that if you have had what might be a rare opportunity to do some operating, that band conditions have been good for you.

Our weekly broadcasts, just to refresh your memory, are still in recess until Monday January 17th which is one week before our first monthly meeting for 1984. Please remember of the please of the word of the please of the our January meeting we note to present an edited compilation of the January 1993 and January 1994 UHF UHF field day which will have taken place just ten days before the meeting. In poer that our trieless film crow will find the required time to put longther at landsling insight into the world longther at landsling insight into the world

Someone asked me at the Christmas BBQ, back in November, when I intended to drop the subject of our February annual general meeting. Considering that the question was asked in polite company I chose to treat the matter with the characteristic light heartedness for which I am renowned. However, returning to matters of grave importance, the AGM is not just a topic that attracts my interest as a way of padding out this column. The difficulties various Divisions, and indeed almost all volunteer groups outside of our hobby, experience in co-opting members for positions on a committee of management is a subject deserving of a text book in its own right, not just brief coverage in this column.

Having straved dangerously close toward an observation that could be misconstrued as cynicism, let me applaud what appears to be a stunning resurgence of enthusiasm within our Division. Recent arrivals within the Division, and indeed the hobby, are looking like a force to be reckoned with. Early nominations already represent a substantial percentage of the available positions on our 1994 committee. Perhaps your reluctance in the past has been borne out of the reluctance of others. A little bit like mutual reluctance, I guess. This deleterious negative influence does not exist, according to my recent observations. Adequate notice has been given for you to complete knitting that arctic sweat suit, resign from the young liberals and so on. We look forward

to your nomination, or your being nominated by fellow committee persons, in the very near future.

On my own local scene, I have been plaqued by numerous sources of power line noise for some time. The difficulty involved in detecting, reporting and recitying these problems has been a long term problem. Shortly, I hope to be able to report on what is an imminent success in sorting out these headcahes. The sorting out these headcahes. The official distribution of local amateurs professionally involved in the field, the procedures in terms of dealing with the authorities, will make fascinating reading, I am certain, to anyone who has, or has had, similar difficulties. Stay tuned.

Returning, for a moment, to another topic which amply demonstrates the enthusiasm which can prevail when we egg each other on. John Moyle National Field Day. The three teams, previously mentioned, sound like they are well equipped, well trained and positively dangerous in their capacities to storm the weekend in March. So, be there or be a rhombic!

If you haven't previously tried your hand at VHF, even on the FM frequencies, the VHF UHF field day would be an excellent opportunity to grab a beam and take to the nearby hills. You might be pleasantly surprised by what you are able to work. Consult the rules for the Ross Hull contest. There is provision for a novice entry, competing against similarly equipped stations. Give it a goupt

During 1993, we ran an examination early in the year to accommodate candidates who had supposedly spent some productive time studying during their holidays. The results in this particular exam rather brought into question whether the study had been fruitful. Although we are happy to run exams of the number previously seen, I suspect that so early in the year isn't as beneficial as compressing the same number of exam events into the more concentrated regions of April through November, This offers some potential to courses and classes students who have barely scratched the surface in February.

We will always welcome your expressions of interest in running additional exams providing the number justify the demands then placed on our volunteers. Small exams are simply not leasible unless you are prepared to individually cover all associated overheads on your own, and that work be prohibitive. Based on continued

demand, we would intend to run some four or five exam sessions this year. These would be scheduled approximately in April, May, July, September and November.

No doubt, our new committee, which takes office in February, will have its own plans and provisions for weekly broadcasts. I hope that the provision of material for inclusion in each week's effort is a little more forthcoming to make the visit of the provisions of station facilities or announcing duty? Spreading the load among many ensures a fresh and vital approach.

As a small Division without club rooms or fixed station facilities, the sharing of the broadcast is crucial otherwise the imposition on spare time and hospitality leaves a nasty taste in one's mouth. If you have not been involved in the broadcast and feel that the whole job, even on a roster basis, is too forehoding, consider carrying out one of the associated ancillary tasks. Preparation of material: local news; band conditions; news of visitors: a technical or humorous article seen in another journal. Could you reliably, with others on a roster, take call backs on one of the broadcast frequencies. The expressions of appreciation expressed on the callbacks become meaningless platitudes in supporting the continuation of this large undertaking unless the job involves a wider dynamic group.

Enough precarious soap box work for another month. See you at the January general meeting on Monday the 24th.

VK2 Notes John Robinson VK2XY

IOIIII MODIIISOII VAZA

The VK2 Notes return! Do you remember the Division's recruitment and retention promotion campaign which ran from December 1992 to February 1993? Well, it was a huge success and it's on again — in case you missed the announcement we inserted in December's Amateur Radio.

Members who renew, or non-members who join up between 1 December 1993 and 28 February 1994, will be eligible to win a brand new rig. First prize will be a Kenwood TM-241A 2 m, 50 watt mobile rig, while second prize will be a TH-28A 2 m, 5 watt handheld rig. Total value of the prizes is over \$1400.

All you have to do is renew if you're a member or join if you're a non-member. If your renewal does not fall within this period, no matter — you can renew early! Early renewals must be sent to the Divisional Office, NOT to the Federal Office. All grades of membership are

eligible. Members currently on a threeyear term are included, as are life members. Both prizes will be awarded by way of a draw and presented to the winners early this year following the close of the promotion. Thanks go to Kenwood Electronics Australia who have again generously sponsored the promotion by donating the prizes.

For our numerous country members. the Division has installed a new Freecall telephone service. Outside the Sydney metropolitan area, you can call the Divisional office on 1800 817 644. Free calls to this number can only be made from within NSW. It is only open for calls between 11 am and 12 noon Mondays to Fridays (the hour before 689 2417 is open), and 7 pm to 9 pm on Wednesday evenings. If you are calling, please remember that there may be others trying to get through too, so keep your calls to the minimum length necessary to conduct your business. We particularly welcome country members using this new facility to order books, for example, You can pay for your purchases by quoting your credit card as the Division has credit card merchant facilities

For those who don't manage to catch the Division's Sunday news broadcasts. we have re-established the "voice mail box recorded news highlights", but on a new number. The previous voice mail box was a member's private arrangement and he withdrew it following the AGM last May. The new mail box number is 02 724 8793. You can call the service and hear prerecorded Divisional news highlights — a shorter version of the Sunday news broadcasts. At the end of the recording you are prompted to leave a message. At that point you can wait to be disconnected or simply hang up. Organised by Peter Vernon VK2JPJ, it uses a digital voice messaging technology OCTELNET, by Exicom Communications.

There's a new book in stock in the Divisional bookshop, "Practical Filter Design", written by Jack Middlehurst and edited by Roger Harrison VK2ZTB. It's written in an easy to understand style and covers just about everything you ever wanted to know about the subject of filters and then some. The drudgery of filter design calculations is banished by a series of computer programs, all listed in the book. Better yet, the book comes with a disk containing all the programs for owners of IBM-type PCs. If you don't have that type of computer, all the programs are written in the BASIC language so you might translate them to the BASIC used on your machine.

A subcommittee of Bob Lloyd-Jones VK2YEL, Eric Fossy VK2EFY and Pixie Chapple VK2KPC is working on a draft of Divisional operating policies and of procedures. Their first progress report was due to be presented to Council in December. Their proposals should go a long way to improving the Division's operations, putting the ridiculous laissez-taire attitudes of the past behind us and operations on a proper, business-like footing. The provision's functions and operations on a proper, business-like footing—for everyone's benefit.

And just a reminder. Our Constitution says the AGM (and thus Council elections) must happen in April, or as near as possible to it. If you're thinking of standing for Council for 94-95, better get your nominations in pronto.

5/8 Wave — VK5 Notes

Bowland Bruce VK5OII

I am afraid this will one of the shortest 5/8 Wave columns ever written. Due to a combination of events at work, illness and an early deadline due to the Christmas period, I find myself isolated near the South Australia/Northern Territory border without access to a keyboard of any sort. Not even a battered old typewriter. The same combination of events has caused me to miss the November meetings (Council and General) of the South Australian Division of the WIA.

Such notes as I do have, and they are very few, are down in Adelaide

Firstly, though, let me express Council's greetings and felicitations for the New Year. May it be possible for you to say in twelve months time, "that was a good year".

Secondly, and I know it seems early, but time has a habit of accelerating as a day approaches, give a thought to nominating someone, possibly yourself, to a position on Council. I am writing this on 23 November, the 30th anniversary of the assassination of John Kennedy. One could well paraphrase his well known challenge, and apply it on a smaller scale to our own organisation. Dry or remember if "Ask not, then, what your country can do for you, but rather, what you can do for you country."

How's DX

Stephen Pall VK2PS*

A happy and a healthy New Year to you all. Now that we have all made our secret New Year's resolutions, let me help you with the calculation of your local time in relation with the time in VK2. This is the season of the year when the "burden of confusion" descends on this great country of ours.

On 30 October the majority of the Australian states, VK1, VK2, VK3, VK5 and, earlier, VK7 advanced the clocks one hour, VK4, VK6 and VK8 did not move with the summer. They stayed with their old standard time. As a result, Australia now has five distinct time zones instead of three. When it is noon in Sydney, Canberra, Melbourne and Hobart the clock in Brisbane shows 11.00 am, it is 11.30 am in Adelaide 10.30 am in Alice Springs and 9.00 am in Perth Consequently, New Zealand is two hours ahead of Sydney, Port Moresby is one hour behind. Tokyo is two hours behind Sydney time, Hong Kong three hours behind, South Africa and Moscow nine hours behind. Europe 10 hours behind. Britain 11 hours behind, the US east coast 16 hours behind and the US west coast 19 hours behind Sydney time.

In March this year we will wind the clock back one hour and hopefully things will become normal again.

It is interesting to note that the following

countries, just to name a few, do not have daylight saving schemes: China, Fiji, Hong Kong, India, Indonesia, Japan, Malaysia, PNG, Philippines, Singapore, South Korea, Taiwan and Thailand.

This time change during the Australian Summer should not affect whatsoever the thinking of a "true" DNer. He knows that the Co-ordinated Universal Time (UTC, formerly GMT) did not change. It stayed constant.

Pitcairn Island — VR6

I have a QSL card before me from Meralda VRBMW. It says Taking command of the ship Bourny from Capt Wm Bligh on the 28th April in 1789, Fletcher Christian returned briefly to Tahiti enlisting of Tahitian men and 12 Tahitian women to join the small group of 9 multineers in their search for a safe haven from the long arm of the British News, Cru January 23d in the year Island, burned the Bourny and Depart their small colony hidden from the eyes of the outside world.

Pitcairn Island (25° 4° South and 130° 6° West) is not hidden any more from the outside world. The island has a regular supply shipping schedule every four months. The next ship leaves Auckland, New Zealand, in March this year, so get your QSL card on its way to reach



Photo 1 The ZSOPI team (I to r) James DJ0WQ, Peter DJ2ZS, Roland DJ4LK and Gunter DK2WH. Photo: DK2WH

Auckland at the latest by February. Pitcairn Island has no harbour or jetly. The cargo of the ship is offloaded in about eight hours on the open sea into long boats with about 4-5 bags of mail, and the ship departs. Reply to your QSL card will be picked up by the next ship four months later. It will take at least 12 months before words a work has well as the state.

later. It will take at least 12 months before you get a reply to your card, so be patient.

Of course, you can always phone Pitcairn Island via the satellite link, but a one minute call from New Zealand to

Pitcairn will set you back about \$18. The easiest way to contact Pitcairn is by amateur radio. There are now at least 14 licensed amateurs on the island (six more are in training this year) of which 12 amateurs were very active on 28-30 November 1993 for 48 hours.

The Pitcairners were celebrating, with a special callising, the signing of the so called "Pitcairn Island Constitution" (the administration rules of the island) drawn up, at the Pitcairners request, by Commander Russel Eliott Esg., captain of the sloop HMS Fly on board ship on 29 November 1838. These rules gave the women on the island the same voting rights as the men. It can be assumed that the Pitcairners were the first in the world to obtain women's suffrage 155 veers ado.

The special event station used the callsign VR6FLY plus the actual step. Callsign VR6FLY plus the actual superator's suffix. The following Pitatim stations took part in the celebrations: Town VR6TC, Betty VR6YL, Betty VR6YL, Betty VR6YL, Meli, Meratida VR6MW, and the new generation of amateurs Trent VR6TL, Shawn VR6SC, David VR6DB, Mark VR6ME, Clarice VR6CN and Dave VR6DR.

To obtain a special OSL card you must state the operator's suffix, ie VR6FLY/TC, if your contact was with VR6TC. OSL, direct only, to Brian Young, Private Bag, Pitcairn Island, South Pacific via New Zealand. Pleas enclose a SAE and one "green stamp". IRCs are not used on the island. Be patient and wait on the reply.

Penguin Island — ZSO & Walvis Bay — ZS9

This German DXpedition took place from 28 July to 4 August last year (see Amateur Radio June and September

issues). Gunter DKZWH, one of the participants, has written me a letter about the Penguin Island adventure. The four the Penguin Island adventure. The four the Penguin Island adventure. The four Lord Company of the Penguin Island as as VS1LK), Peter DJZZS, James DJWW and Gunter DKZWH left Windhoek, the Namibian capital, on 28 July for Luderitz, and Island-looking harbour town, 800 km north on the Atlantic Coast. The fishing boat "Mirandid" carried them to the island on 28 July 10 J

The island is uninhabited and is very small, about 1500 by 500 metres. The old buildings are in disrepair. The expedition's first task was to clean out one dilapidated house of the strong smelling quano, the "white gold of the cormorants", which is still produced by more than a half million seagulls, cormorants and all sorts of other birds. After many hours of hard work the house became a shack, kitchen and sleeping area. Activity started early afternoon with a vertical antenna. Next day they put up a Yagi for 20, 15 and 10 metres, and the WARC bands. Soon after that they installed a second station in another house about 150 metres away. Propagation from the island was not the best. Early mornings favoured VK and the Pacific. At a very low QSO rate, the afternoon produced big pileups from Europe and Japan. Weather conditions changed, fog set in and even rain, which is a rare occurence in winter.

Everything was wet and water came through large holes in the roof. Windspeed increased with a heavy storm which prevented the team leaving the island on the scheduled day. They eventually left the island at daybreak on



Photo 2 Gunter DK2WH operating SSB from Penguin Islands ZSOPI.

Photo: DK2WH



Photo 3 Penguin Islands ZSOPI. House No 1 with 4 el Yagi. The white on the rocks is not snow, it is strong smelling guano. Photo: DK2WH

5 August. After a 12 hour drive back to Windhoek, the team split up. James DJ0W0 and Peter DJ2ZS continued DVing in Walvis Bay, Roland D0ALK had to catch a plane, and Gunter met his family and went on a safar to the Angolan border, operating as VSI/DK2WHJp. The expedition made a total of 10,000 GSC6 (SSB, CW and RTTY). Incidentally, it is quite possible that this was the last DAG COMPAN CONTRACT OF THE CONTRACT

Christmas Island — VK9X — Update

In the 1933 survey conducted by "The DX Magazine", Christmas Island ranked 35 as one of the most wanted countries. It is anticipated that the successful operation of VI9XN and VK9XO in December will have reduced the demand below the 50 mark by the time the next survey comes around.

Christmas Island has changed quite a lot lately. There is now a twice a week regular air service from Perth, a daily service from Indonesia, and regular services from Singapore.

 December, hundreds of millions of red crabs emerge from the forest to lay eggs on the island's cliffs, and millions of dollars will be lost at the casino tables.

Peter I Island — 3Y0PI

As announced previously, this DX operation will commence on 1 February 1994. As at 14 November all the equipment was crated in Florida, USA and flown to Uruguay where it will be loaded aboard the icebreaker that will take the group to Peter I Island. In addition, another three tonnes of equipment, from European sources, is also to be loaded on the ship. In mid-January the whole team will fly to Port Stanley in the Falklands to board the ship. En route to their destination, they will operate /MM.

Latvia — YL75

Several Latvian stations used the special prefix IV.75 to commenorate the founding of the Latvian Republic 75 years ago on 18 November 1918. The Latvian QSL Bureau is not currently active, therefore only direct mail will produce a special reply QSL card. Do not indicate callsigns or any reference to amateur radio on the envelope, otherwise your CSL card might get "lost". QSL to YL75DX (see QSO schedule), YL75R J Battins, PK 100, Rigar, IV.1007, Latvia; VL75Z S Hochberg, PK22, Jelgava, LV3000, Latvia.

Leones and Blanca Island — L4

Members of the LU4DKK Radio Club were active in November from Leones and Blanca Islands, Argentina. As quite a number of VKs have worked them, here is the QSL address. The Manager, Box 134, 9 de Julio — 6500, Prov Bs As, Argentina, South America.

Northern Cyprus — 1B1NCC

This station was on the air from 15 November for two weeks. The station operated from the Turkish (northern) part of Cyprus, administered by Turkey since 15 November 1983. The DXCC status of 15 November 1983. The DXCC status of this station is not known. Direct QSL to G0TTx with one IRC (donations are not requested). Bureau cardes will be answered by G0TTx, the QSL manager, via the bureau.

Future DX Activity N2COR/HI8 Bill is an economics

- officer with the US Foreign Service and is stationed in Santo Domingo until 1998. QSL to William R Meara, 55 Waters .Edge, Congers, NY 10920, USA.

 A71AN Rashid a new amateur
- A/IAN Hashid a new amateur licensed only since July 1993 is on 21190 kHz every day around 1100 UTC. QSL c/o Qatar Amateur Radio Club, PO Box 22199, Doha, State of Qatar.
- It was reported by various DX sources that LASPF2, in a QSD to GSJHUC, said "At the recent visit to Mount Alhos, due to a difficult situation, they were only able to make about sixty QSDs (CW, SSB, RTTY)". JASMNP went back to Mount Alhos and has obtained further permission to operate all modes. This activity might eventuate in April this year.
- fi is rumoured that the planned expedition to the Andaman and Nicobar Islands VU4 by VU2SMN and VU2NTA had the promise of inancial support from the government.
 however, in the meantime, government money was spent on areas hit by the recent earthquakes. The eartliest promised date for the VU4 activity is not before the end of March
 - It was reported on several packet DX bulletins that the proposed Iranian activity by EXOA and others had to be postponed because the border was closed due to several cholera cases.
- Jean J28JJ will be active from Djibouti for the next three to four years. QSL to Jean Jacques Chatclard, Box 1076, Republic of Djibouti, Africa.
- Scott N7TNL is now active from Midway Island as N7TNJ/KH4 and was worked from VK2 with a signal strength of 9. He will be active until 6 January. He is with the US Fish & Wildlife service. QSL to W100 or via the W7 Bureau.
- 9K2ZZ Bob is nearing the end of his stay in Kuwait. He is active from 160 to 40 metres. QSL to W8CNL.

- 3X0DEX in the Republic of Guinea is quite active on several bands. QSL to Box 104, F-22650, Ploupalay, France.
- A61AF is a new club station operated by three foreign hams in a Technology College. It is operational around 1300 UTC on Tuesday nights only. QSL to the club station A61AF C/o Dubai Mens College, PO Box 15825, Dubai, United Arab Emirates.

Interesting QSOs and QSL Information

- BA4AD Davy 14180 SSB 0957 — Sept — QSL to Davy, PO Box 085-227, Shanghai — PR of China.
 YL75DX — Yuri 0 14180 — SSB —
- 1L73DA Vall V I I I I I I I I I I I I 205 Nov. QSL to Yuri Baltin, PK 265, Riga 50, Latvia LV-1050, Europe.
 WH0AAV Jun 14226 SSB 1159 Nov. QSL to Jun Mercado, PO Box 1914, Salpan MP 96950 USA.
- 9X/DL6OBY Gisa 14215 SSB 0544 Nov. QSL to Hartmut Gumpert, C/o D Welle, Box 420, Kigali, Rwanda Africa.

 VR6DB — David — 14277 — SSB — 0499 — Nov. QSL to David Brown, PO Box 13, Pitcairn Island, South Pacific,

via New Zealand.

VR2BH — Martii — 14195 — SSB — 1126 — Nov. QSL to KA6V Joan E Branson, 93787 Dorsey Lane, Junction City, OR 97448 USA.

8R1AK — Esmond — 14222 — SSB — 0549 — Nov. QSL to Esmond Jones, PO Box 10868, Georgetown, Guyana, South America.

 VR6ME — Mark — 14180 — SSB — 0443 — Nov. QSL to Mark Ellmos, PO Box 24, Pitcairn Island, South Pacific,

Box 24, Pricairn Island, South Pacific, via New Zealand.
 ET3BH — Bert — 14222 — 0611 — Nov. QSL to SM3EVR, Tord Julander, Box 547, S-86020, Niuranda, Sweden.

- SU2MT Mohamed 7056 SSB — 1927 — Nov. QSL to Mohamed Tartousieh, PO Box 1616, Alexandria, Egypt.
- VR6CB Clarice 7043 SSB 0609 — Oct. QSL to Clarice, PO Box 11, Pitcairn Island, South Pacific, via New Zealand.
- VE8GO Brian 14243 SSB 0633 — Oct. QSL to Brian McKay, PO Box 565, Rankin Inlet, NWT X0C 0G0 Canada.

From Here There and Everywhere

 Yasuo "Zorro" Miyazawa JH1AJT advised me that he is the QSL manager for the following stations: XW8KPV, S2IU, JA7OWDJD1, FK8EJ, ET3DX, 9E2A, E31A, ZK1XH, A3SST, SW1IB, YJOAST, VEOMEA/KH, VEOMEA/FKB, VEOMEA/KH2 and others. His address is Yasuo Z Miyazawa, PO Box 8, Asahi, Yokohama, Japan 241.

- As from 1 January 1994, the Moldavian radio amateurs will use the new prefix of "ER" instead of the old "UO". The address of the new Moldavian QSL Service Bureau is PO Box 6637, Kishinev, 277050, Moldova.
- ZL6RFA was a special event station in Taranaki/New Plymouth celebrating the Rhododendron Festival. QSL to NZART Branch 27, c/o 45 Robe St, New Plymouth 4601, New Zealand.
- Tony, A35UZ was on a four week vacation on various Tongan Islands. QSL to G0HUZ.
- For a few days Willis Island was activated by Michael as VK9WC, QSL to VK4AZM.
 Valery ER1A (formerly UO5ODA) wants
- his cards to be sent to FD1J.

 LZ1HA Todor Dikov advises that all
 - direct QSLs for YASMM were confirmed. Anybody who has not received a card yet, should write again (with return postage) to PO Box 321, 1000 Sofia, Bulgaria.
- According to the "1993 Most Wanted Countries" survey conducted by Chod Harris VP2ML, Editor of The DX Magazine, the first ten most wanted countries are 1 — Peter I Island, 2 — Bhutan A5, 3 — Libya 5A, 4 — Andaman VU4, 5 — Heard Island VR0, 6 — Tunisla 3V, 7 — Yemen 4W, 8 — Tromelin FRIt, 9 — Macquarie Island VK0, 10 — Mount Athos SVIA.
- The ARRL DXAC (DX Advisory Committee) will vote on "QSL Guidelines" in January 1994.
- According to DXCC specialist Bill Kennauer K5FUV, the 3V8PS activity was the last known legal operation from Tunisia. 3V8AA in 1983 was also good.
- Due to the increase in German postal rates it appears that the most economical way is to send two IRCs instead of "green" stamps for a direct QSL.
- HG27BCS was celebrating 275 years of the town of Bekescsaba. QSL to Janos Kulish HA8PO at PO Box 257, Bekescsaba, H-5601, Hungary.
- CQ8C is a special Portugese call, in operation until 16 January. QQSL to CT1EGW.
- John WKäKWO has passed on to me a letter received from Tom Tomorbeatar JT1BY, Box 470 Ulan Bator, 13, Mongollan Republic. Tom appears to be the QSL manager for a number of Mongolian stations. He requests a SAE with one "green stamp" for direct reply. He has the logbooks for the following Mongolian stations. JT1KAA (club.) JT1T (used in contests), JTAO, JTCO,
 JT1T (used in contests), JTAO, JTCO,

JTIV (club), JTIBS, JTICS, JTICS, JTICS, JTIBG, JTIHAI (club), JTRAA (JTKAA), JTRAA (JTKAA), JTRAA (JTKAA), JTRAA (JTKAA), JTICD, JUBSOC (1992-3). Tom is 26 years old, married, interested in radio since the age of 16 and active on the air since 1985. Tom's wife is a CBer and they have an 8 months old son. He is the foreign trade manager of a Mongolian trading company.

Francis FT5YE leaves the French Antarctic station, Terre Adelie at the Dumont D'Urville Base, at the beginning of February. He will return to France to reply to the thousands of

QSL cards which are waiting for him.

 Please note. The correct address of the Italian QSL Bureau is ARI, Via Scarlatti 31, 20124, Milano, Italy.

QSLs Received

Z31PK (4W YU5XVD) — OM3EY (3 W op) — BA4AD (5 W op) — A71BM (5 W op) N9NS/KH5K (6 M N9NS) — VE8GO (4 W op) — ZK1AT (6 W op) — ZK1DT (6 W op).

Thank You

Many thanks to the contributors to this column. All of you were very helpful, especially VK2DSL, VK2KCP, VK2KFU, VK2LEE, VK3DD, VK3KVQ, VK4CY, VK4OD, VK4OH, VK6PY, VK9ND, JH1AJT, VK6MW and publications QRZ DX, The DX Builletin and DX News Sheet.

**PO Box 98 Durin NSW 2158

ar

WIA News

New UHF DX Record

Two US amateurs, Paul Lieb KH6HME and Chip Angle N6CA, set a new terrestrial distance record of 3973 km for the (US-allocated) 902 MHz band, working between Hawaii and California (a legendary path for this sort of activity).

Making contact on CW at 0136. UTC on 23 August last, signals were reported as "just out of the noise". Two metres was used for liaison. They made an unsuccessful attempt to span the same path on 2304 MHz. The 902. MHz equipment used for the record-breaking achievement was designed by NBCA, according to the Westlink Report, No. 658, of 30 September.

Silent Kevs

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-MILLER A H (Aub) VK2EEX R C (Bob) SMITH VK3YU TURRIN

R H (Dick) W2IMU C R (Russ) WATT VK2WT

Russ was born in London in 1904. where his father was studying to become a doctor, and came to Australia in 1907 following his father's graduation.

Dr Watt set up his practice in Tenterfield and became one of the best known and revered doctors in the north of NSW. where he purchased a property "Warrenfels

From an early age Russ accompanied his father on his rounds which included trips into the surrounding country for distances up to 50 or 60 miles at all times of the day or night. When old enough he was the driver for his father, firstly by horse and sulky and later by the early model cars.

Russ eventually took over the management of Warrenfels and, together with his two sons, produced some of the finest wool in Australia, from their Merino sheep, topping markets on many occasions

Russ married Margaret Kennedy in 1937 and in 1940, Anthony was born followed by David in 1946. There are three grandchildren, Andrew, Felicia and Christopher. Christopher hopes to qualify for and eventually use his grandfather's call sign VK2WT

Amateur radio was a prime interest of Russ from his school years and in 1925 he obtained his amateur operator's licence and became a member of the Wireless Institute of Australia, Using home brew equipment Russ worked the world with four watts collecting many thousands of QSL cards, having at one stage contacted every country in the world. In later years he attended many call back sessions and was present on many regular nets

Among his home-brew achievements was the construction of a metal lathe, which he frequently used. He built his own variable condensers, cutting sheet metal from the early petrol containers. A burnt out generator was worked over and rewound to provide, as required, 50 volts DC for the home lighting plant, 240 volts AC for the pump on the dam and 110 volts DC for the home washing machine and electric iron, for Margaret. When the 240 volt AC was provided from the town. Russ continued to run the house from a 110 volt transformer, for reasons of safety.

For years he helped install, service and maintain two-way equipment for the local council, ambulance and other local users. Russ was loved and respected by all who knew him and will be sorely missed in the world of radio

He died while watching Anthony and David rounding up the sheep on 18th October last.

Max Reid VK2EMX

Richard Herbert (Dick) Turrin W2IMU 1925-1993

Dick W2IMU, who passed away on 11 November, was one of my (and many others) greatest friends and advisers on technical matters, especially EME communications. Dick was born and died in New Jersey, USA and was employed by Bell Telephone Labs.

He was an extra class licensee, as well as a BSc and an MSc in electrical engineering and a truly compassionate person who always went out of his way to help others.

Due to his encouragement, help and advice I won the ARRL Technical Merit Award in 1967 for EME two way contacts on 2 m. initially with Crawford Hill VHF Society K2MWA/2 operated by Dick! On my visit to the USA in 1968, Dick, Society members and a live kangaroo greeted me.

Apart from many technical articles in

American magazines. Dick wrote his classical EME notes, starting 25 years ago, and they are still an important information source. Many amateurs worldwide received lengthy answers to their many questions on moonbounce operation, including VK and ZL 144, 432 and 1296 MHz problems.

Dick visited VK in 1979 to solve an antenna problem for the CSIRO and was guest speaker at a packed EMDRC meeting. His XYL Noranne K2OJO predeceased Dick in 1978. He is survived by one daughter and two sons. Dick was partially crippled by a stroke in February

Vale a true gentleman and friend. Ray Naughton VK3ATN/VK3NA

R C (Bob) SMITH VK3YU

My father died recently following a tragic accident. He was an active radio amateur in both voice and Morse code. He enjoyed the 10 metre band and won

quite a number of competitions for the Oceania and Australasia regions Many years ago he lectured at night classes at the Marconi School of Wireless

for 14 years, and his knowledge was self taught. On 30 September he was delivering

Meals on Wheels. As he was standing at the back of his car getting out the next meal he was hit by another car illegally travelling in the parking lane. He died in intensive care at the Box Hill hospital on 7 October 1993. **Barbara Pallot**

Repeater Link

Will McGhie VK6UU*

FM 828-2

This is the second circuit drawing of the popular FM 828 used in the majority of repeaters in Australia. This month's circuit is of the

intermediate frequency preamp, limiter amplifier and coincidence detector. The circuit provides the 10.7 MHz selectivity, 10.7 MHz amplification and demodulation to audio

If the circuits are printed to the same scale in Amateur Radio then they will line up and could be placed end to end, inputs, outputs, power and earth all meeting. If space requirements do not permit this, I can make the circuits available to you at the same scale.

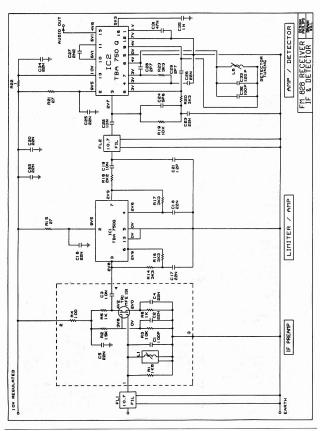
All these circuits were produced on

computer using the CAD program Draft Choice. If you would like a copy of this CAD program and the FM 828 computer circuits let me know. Not all the FM 828 circuits are completed yet, as they take considerable time to draw onto computer. These circuits can also be made available via packet in 7 Plus format.

The CAD program Draft Choice is an excellent circuit drawing program and being shareware is easy and cheap to obtain. If ever amateurs were to agree on a CAD program for circuit exchange, this would be my recommendation

If there are any errors in the circuits, please let me know.

*21 Waterioo Cr Lesmurdie 6076 VK6UU @ VK6BBS



International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL*

The International Amateur Radio Union Monitoring System

This comprises the three Regional Monitoring Systems. In turn the RM Systems are made up from the national

society monitoring systems.

The present IARU MS is the culmination of many years of work by a tew dedicated amateurs. They had struggled on, often in the face of apathy and sometimes hostility. These few "intruder watchers", as they were then known, had the support of a few farseeing administrators in two or three societies and in the IARU, who realised that the amateur bands were not a limitless resource.

We have to protect the frequencies allocated for our use. With the increasing demands for spectrum space, and the tendency of some administrations to ignore their responsibilities under the ITU Convention, it is evident that the Amateur Service must have a strong, unfilled with effective monitoring system, it is to retain effective monitoring system, it is to retain factual, authoritative information about "intruders" for further action.

The monitoring system is made up of volunteers, whether they be amateurs or SWLs. Experience will range from a few weeks to many years. Regardless of their level, all monitors are capable of providing useful input to the monitoring service. Being volunteers, monitors must be free to dedicate a minimum of fwo to three hours each week. It would be advantageous for monitors to cover only one of the control of t

Basic equipment is just that. A receiver (or transceiver), an antenna (beams are handy as are beam headings), a pair of ears plus the operator's ability to learn the limitations of each. Observers pleases note, your Maidenhead grid square location would be much appreciated, or your Latitude and Longitude (fils should be available from your local council). This igives the Spectrum Management Agency (SMA) Monitoring personnel a starting point for ex-beck our observations, so the necessary action can be taken. a drawing of your antenna set up showing the direction of, for instance, a dipole. This will only be needed once, unless you use a new dipole. The national co-ordinator will note this and your locator for further logs. I do require advice of your type of receiving equipment, for various reasons. Not all receivers have the same IF frequencies.

Of course I want frequency, time in UTC, date, mode, and an ID if you're so lucky. Frequency preferably should be measured against a recognised frequency standard if available or a crystal calibrator to check dial accuracy. Do not use your clarifier.

It is preferable that reports be typewritten. If this is not possible, hand written CAPITAL LETTERS should be used. This assists in correct information being transferred to the summary, which is forwarded to the IARU Region 3 coordinator, the SMA, the state co-ordinators and WIA Federal.

The monitoring system in VK has plenty opportunity for observers to contribute some worthwhile assistance to the world wide organisation. The IARU Monitoring Service defines a route by which the ordinary rade amateur in any country has ordinary rade amateur in any country has been assisted to the organization of the organiza

When can I see your first log??

*Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL @ VK4UN-1 ar

QSLs from the WIA Collection

Ken Matchett VK3TL* Honorary Curator WIA QSL Collection

Wake Island

If we were to draw a line between Hawaii (winch is just about in the middle of the Pacific) and the Philippines, Wake Island would be approximately half way, II, like many Pacific islands, is an atol. The island, with an area of only 8 square miles, was discovered by Mendana in 1688 and "rediscovered" by Capt William Wake of the British schooner "Program Wake of the British schooner "Program William Henry" in the year 1776. Commodure Williams, American, Ikan

uninhabited when discovered, was annexed by the USA in 1899 and used as a cable station. Later it was used as a stop-over for Pacilic flights between Honolulu and Guam. In fact, Pan Honolulu and Guam. In fact, Pan in 1935 and used it for its China Clipper Service. One OSL in the WIA collection goes so far as to describe Wake Island as the "Aviation Hub of the Pacific" (It was for a QSO dated Dec 1984).

The island was proclaimed a Naval Defence Area in 1941, many workers



those without a beam, I would appreciate

Amateur Radio, January 1994

being sent there to build up the air facilities and the submarine base. However, no sooner had several facilities. been established than the Japanese attacked, actually only a few hours after the bombing of Pearl Harbour, Hawaii on the 7th December 1941. A few hundred marines and airmen on the island repulsed a Japanese naval task force and even sank an enemy cruiser, but the resistance did not last. Over 1000 Japanese troops landed on Christmas Eve 1941 and took control of the island. Lt Col W L J Bayler and Cecil Carnes give an interesting account of the experiences of the Wake Island personnel under Japanese air attack (and later, naval bombardment) in their book "The Last Man off Wake Island" just before the island's surrender. The island remained under Japanese occupation for the duration of the Pacific War since there was no attempt by Allied Forces to re-take the island. Although in Feb 1942 Wake Island was raided by US Navy aircraft, there was none of the bloody fighting with which we associate some of the other Pacific islands such as Iwo Jima and the Solomons. The island of Wake passed into Allied hands upon the surrender of the imperial Japanese forces on 4 September 1945.

K6LHA

The letter K was originally allocated by the ITU to both German and United States ship and land stations during the years before World War 1, but was not used by amateur (experimental) stations at that time. These generally used their own initials for their unofficial call-signs. Although the system of "intermediates" (See Amateur Radio August 1898 and August 1899) did include a few US

W7KHN/KH9

WAKE ISLAND – MID PACIFIC

WHERE AMERICA'S DAY REALLY BEGINS

MBR SAN DIEGO DX CLUB 73. TOM MORTON

possessions such as Hawaii (OH), Canal Zone (NZ), and Alaska (NA), there was no allocation to Wake Island. The modern prefix system, introduced in early 1929, assigned the letter K to American possessions other than mainland USA (to which the letter W was assigned). Thus we had KA (Philippines), K4 (Puerlo Rico), K6 (Territory of Hawaii) and K7 (Alaska).

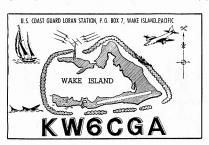
By the outbreak of World War 2, several K, prefixes had an identifying letter, eg KG6 (Jarvis Is) and KF6 (Baker Is) but several "countries" such as Alaska, Hawaii and Puerto Rico retained their earlier prefixes. Up to the year 1938 the prefix K6 was shared by both Hawaii and Wake Is. The January 1939 edition of QST lists K05 as the prefix for the Wake Group (Javon Hawaii and Javon Hawaiii and Javon Hawaii and Javon Hawaiii and Javon Hawaiii an

station KC6BNL on Wake. After the war the KC6 prefix was allocated to the Caroline Islands.

After the outbreak of war, US hams were permitted to conduct QSOs with US external possessions but from June 1940 were forbidden by the FCC to contact foreign stations (although the US was not then at war). The accompaning QSL, KGLHA, was one received by well-known Dxer, low Statford VK3XB on CW for a QSO in 1937. The sender was an employee of Pan American Airways.

KW6CGA

After the war, so great had the numbers of US hams increased that K prefixes had to be used for mainland US stations. By then, all US external possessions having also the K prefix were further identified by an accompanying letter, eg K6 (Hawaii) changed to KH6. Alaska (K7) changed to KL7, and so on. At the same time, Wake Island assumed the KW6 prefix. The accompanying QSL KW6CGA sent to the author directly from the island in early 1961 clearly shows the geography of the island. The island is in reality three islets. The largest one is Wake and is the site of the large and strategic airstrip. To the north lies the small islet of Peale on which Pan American Airways built its hotel and was the QTH of amateur station KW6CGA. The other islet to the south is Wilkes Is. All the islets are protected from ocean movements by a coral reef that almost circumscribes the island group. Peale Is owes its name to the naturalist who accompanied Wilkes on his exploration of the Pacific. One of the islands has been investigated fairly recently as a possible home for the natives of Bikini Atoll which at present cannot be re-occupied because of radiation hazard.



W7KHN/KH9

The prefix KW6 and the rare WW6 (for US novice licensees) remained in use until the mid 1970s when KH9 was allocated, (Prefixes NH9 and AH9 have also been used). The first KH9 was Dan Lynch WD6CDU portable on Wake Is. The accompanying QSL, W7KHN/KH9, was for a QSO in February 1980 and was received by that well-known Old Timer (since a "SK"), George Luxon VK5RX. The significance of the words "Where America's Day really begins" lies in the fact that Wake Is, having a longitude of 166 degrees east, is just west of the International Date Line where a new day begins.

Since 1974 the island has only been used as an emergency stop-over for commercial airoraft. Today the US uses the island as a weather station. It is occupied principally by US Air Force personnel and some civilians engaged in special projects such as oceanographic and meteorological surveys. Prior permission is necessary before any landings on Wake can be made and more personnel and such as the person of the person of

Author's Note

If you enjoy reading this series of articles on the history of amateur radio through OSL cards, perhaps you would not only on the order of the order order of the order ord

following for their kind contribution towards the collection (supplementary list): Neil VK6NE, Tom VK5TL, Dick VK4KEZ, Jim VK3AZT, Mike VK6HD, Hervey Bay Amateur Radio Club, and Austin VK5WO.

*4 Sunrise Hill Road Montrose VIC 3765 Tel 03 728 5350

VHF/UHF An Expanding World

Eric Jamieson VK5LP*

All times are UTC

Beacons

In response to my requests for the beacon network to be completed. I have been advised by John VK3KWA (VK3ZJC) that Ron VK3AFW is testing the installation of a two metre beacon at the Monash University to provide a signal from the Melbourne area. The beacon will run 15 watts to a halo antenna 80 m asl. Details latter.

Steve VK3OT advised me he would be willing to provide a tower and site for a beacon in western Victoria if someone will provide him with the beacon as he doesn't have the time to build one. Any offers?

Trevor VK5NC reports that the Mount Gambier beacon on 144.550 is receiving its final test run and should be operational before Christmas and certainly by the time you read this information. The beacon will sign "de VK5RSE Mount Gambier QF02" followed by key-down for 30 seconds after which the minute cycle will be repeated.

So it appears that it won't be long before southern Australia will again have access to propagation warning devices and that's good news. A consistent six metre beacon into VK3

and VK5 has been VK4RGG on 50.058, obviously a satisfactory Es distance. Of course, Channel 0 from Toowoomba continues to destroy large sections of 50 MHz with its massive signal under Es conditions.

Whilst not a beacon, a station to keep in mind when beaming inland is Fred Baker VKZYZU at Peake Hill, 412 km west of Sydney and near Dubbo. Fred is operational on six metres with 50 watts and two metres with 100 watts and using DL6WU antennas.

Six metres

Responding to my request, Steve VK3OT has provided me with an overview of activity on six metres for November, the following being typical. 4/11: 0330 43/44 MHz Asian telephones with afternoon TEP flutter and 49.748 MHz TV video by Seater; 0345. 421G/Wh to 419 by scatter; 0350 49.750 TV 59; 0700 46.240 TV uroral scatter; 1100 VK2GP, VK2GP; 1150 VK4RGG/h 559. 5/11: 0345. JA2IG/Wb by scatter; 1040 JH2D/N 319 on 50.480; 0423 beacon 43.520 drift net fishing K329 339; 0436 Thailand TV 48.2602/48.2604; 0440 Laos TV 49.7604; 0450 JA2IG/Wb 559; 0700 telephones 43-45 MHz; 0730 Chinese telephones 43-730 and 50.076.

6/11: 0138-0800 VK4BROID, VK4IAM, Neard VK4AMK,LR,HK, VK2ZXC, VK3LK4, VK4ABPID, JA2IGYID, JUTWKZ, VK3LK4, VK4ABPID, JA2IGYID, JUTWKZ, 4750 TV, VK4SIX MI Isa, JA9LTD, JCSELD, JH4HJPO, JRZENY, JA72. 7/11: 0200-0545 VK4ABPID, VK4RGID, VK7VL, VK6AJ, VK6KLY, JROVED, JAFON, JASCON, VK5WL, JAVED, JAFON, JASCON, JAZIGYID, JASCOJNA, JATODY, JASCON, JAFON, JASCON, JAFON, JAFON, JASCON, JAFON, J

It has also been noted that VKSYOS on Lord Howe Island has been worked by a number of stations including as far south as to VK3DUT, VK3AMK and VKSBC. I am of the opinion we will be hearing stations from the Pacific islands quite frequently during the next few years as the Es improves on the downside of Cycle 22.

Six metres EME

With F2 conditions deteriorating, Steve VK3OT looked for other conquests and turned to six metres EME using his M* antenna. On fell at 1515 WsiI/V was heard calling VK3OT at 519, 1535 Oscar report from WSII/V but unable to conclude QSO due to QRIM. On 711 unable to conclude QSO due to QRIM. On 711 unable to conclude QSO due to QRIM. On 711 unable to conclude QSO due to QRIM. On 711 unable to conclude QSO due to QRIM. On 1510 CRIM. O

So the first contact was on 7/11 with Jim WGJKV, followed by Bob WGCXY and then Mike K6MYC. Moonset sked with OH2BC on 12/11 but although Steve could copy OH2BC, the reverse was unsuccessful. Steve's equipment consisted of a TS670 to a Mirage A1015

When you buy something from one of our advertisers, tell them you read about it in the WIA Amateur Radio Magazine. and a pair of 4/400A at 1 kw with high power permit, mast-head pre-amp on receive.

As far as I am aware these are the first six metre EME contacts from Australia It will be interesting to see how many countries Steve can work using EME as that mode of operation is on the increase in overseas countries. Good work

WORLD FIRST

In what is believed to be a world first. six metre contacts have been made with mainland Antarctica from another continent, Australia. Three SSB contacts occurred on 19/11/93 to Mark VK0AQ at Casey Base with the first being by Steve VK3OT at 1209 UTC with signals 5x5, followed by Ray VK3LK at 1215 5x2 and Trevor VK5NC at 1218 5x2, all on 50,120 MHz. The beam heading from Australia was between 195 and 200 degrees.

Credit for the initiation of these contacts must go to Hugh VK5BC who was in contact with a ZL station around 0938 and mentioned he was copying a beacon VK0AQ on 50.200 and thought it was originating from Macquarie Island. Apparently this information was heard by Mike VK3BDL and Jim VK3AZY, then by the ever watchful Steve VK3OT, who found the beacon and began to tape record its 559 to 579 signals. Unfortunately, Hugh did not work VK0AQ.

Then followed a great flurry to try and organise Mark VK0AQ to come on air but one of the few people to have Mark's telephone number was me, and where was I - out at a meeting! Eventually Steve tracked down a number and phoned Mark and a two-way contact resulted at 1209. So the beacon had remained audible for two and a half hours with its strongest signals between 1000 and 1100. Attempts were made to raise other stations on the air but for various reasons, it seemed people were not available, so there were few to alert. Had I been home I could have saved about two hours of wasted time by alerting Mark myself.

According to Hugh VK5BC the band had been open most of the day to all of Australia except VK8. In addition contacts had been made with VK9YQS on Lord Howe Island and ZL2, 3, 4. The beacon signal from Casey appeared to have some auroral content and probably arrived in Australia with the assistance of Es. Australia has maintained six metre beacons on the Antarctic continent for more than 20 years and there have been occasional reports of hearings when the beacon was located at Mawson, but no

actual contacts. Unless there have been unreported contacts from South Africa or South America to Antarctica, then these contacts must rank as the first on six metres. Congratulations to all involved.

Incidentally, for the purposes of receiving the Worked All Continents Award, it is just as well that a contact is not required with Antarctica or none would have been issued for six metres. With the above contacts. Steve VK3OT and Trevor. VK5NC now qualify as having worked a seventh "continent," and would appear to be the only operators in the world to do so. It's a humbling thought.

From Europe

Ted Collins G4UPS in his monthly report says he has been conducting daily six metre tests with G3CCH at 350 km and SM7AED at 1200 km with some surprising results. Although Arne SM7AED is not active every morning, on each morning that he is available they have completed QSOs. Ted believes they are communicating via extended tropo or forward scatter mode. Signal reports are usually around 559 to 579. The Swedish contact seems quite a good effort to me as it is roughly the distance between Sydney and Rockhampton, Perhaps Mike VK2FLR and Lvn VK4ALM could try the path for regular contacts!

It appears from Ted's October report that either six metre stations are losing interest or conditions have been poor. although there appear to be at least ten beacons heard. Prefixes mentioned include 4N1/b, 5T5, 7Q7, 9A3FT, 9H1. 9H1/b, 9H5, A22, CQ7CBI, CT0/b, CT1/b, DF7, DL4, EA3/b, EH1, EH3, EH6, EH7, EH8, EH9, F5, F6, I2W, IC8, IK0, IK8, IT9, OE4, OM3, OZ4, OZ6/b, OZ7/b, S55/b, S59, SM7, SV1, SV9/b, YO2, YT1, YU1, YU1/b, Z23, ZS6 for a total of 41 which would be excellent by Australian standards!

The Perth Scene

Graham VK6RO reports that September and October 1993 was a poor period for Perth. 49.750 TV was heard on 19/8. 10/10. 18/10. 20/10. 24/10. 28/10. 48.250 TV on 13/10, 14/10, 27/10, On 14/9 57.250 TV from Port Pirie

A reasonable opening occurred on 28/10 at 0728 with JA beacons on .008. .017 and .027, 0818 phones from Asia on 50, 52, 53 and 55 MHz, 0828 48.239.6 and 48.260.4 TV, 0829 HL9UH, 0833 JK1PUI, 0841 VK6RJ at Broome, which Graham says is DX for Perth! Other stations on during the 28/10 opening included VK6YU, VK6HK, VK6KRC and VK6JJ. Graham comments that in Perth a few vears ago, they would hear the 49,750 TV for up to 12 hours a day, but not now,

Graham also says that he has a 1993 Japan Repeater Directory in which details are given for 2 repeaters on 29 MHz, 792 on 70 cm, 632 on 23 cm and 95 on 2400 MHz. That's a lot of repeaters!

Microwaves

Information I had to carry over from last month was contained in November QST and "The World Above 50 MHz" by Emil. Pocock W3EP. Details were given of the Trans-pacific Record contact on 902 MHz.

Shel NI6E/KH6 observed that the tropo path to California was good early in their summer and for the first time in seven years he heard FM broadcast stations from northern California and these signals were strong on 18/19 June, 9/10 July and 4/5 August. It is believed many two metre contacts were made between Hawaii and the mainland during those periods.

Chip N6CA on top of Palos Verdes near Los Angeles decided that 23/8 was the day, so Paul KH6HME went to the 2500 metre operating site on top of Mauna Loa and found signals strong on 144 and 432 MHz across the Pacific, At 0136 the pair made a marginal contact on 902 MHz CW with the distance being 3982 km. Congratulations. The pair tried for four hours to bridge the gap on 2304 MHz but were unsuccessful.

N6CA designed and built the identical stations used at each end, consisting of 12 watt transverters, receivers with a 0.6 dB noise figures and four metre loop yagis. For them, the remaining challenge is 2304 MHz, and it seems only a matter of time before they wrench that record away from Reg VK5QR and Wally VK6WG, the present record-holders.

24-241 GHz Work in Denmark

Emil Pocock W3EP writes that during the annual Danish GHz Activity Week. June 6-12, northern European microwave enthusiasts recorded numerous firsts. according to Steen Gruby OZ9ZI, Steen estimates that more than 400 QSOs were made on 10 GHz and up, including Danish firsts on 145 and 241 GHz. Skagen, which sits near the end of a peninsula on the Danish far northern coast, served as the centre of operations.

Most of the activity was on 24 GHz, because 18 members of the GHz North Zealand Work Group and the PROCOM Amateur Radio Club had just completed 24 GHz transverters. Built from designs developed by OZ1UM, the narrow-band transverters run about 50 mW with 6 dB noise figures and small dish antennas. The results were spectacular. OZ/DB6NT and OZ1UM made a 208 km SSB QSO with 53/56 reports on the first day of the tests. and by the end of the week most of the 24 GHz stations had made contacts in the 200 km range. Attempts to complete paths to Norway and Sweden failed, even though LA/OZ4PV and OZ5UJ made a 355 km contact on 10 GHz.

OZ1UM and OZ/DB6NT made an 8.8 km SSB QSO on 76 GHz, but there were no other 4.4 mm stations and the weather was poor. Both stations ran a few microwatts to 25 cm dish antennas.

Two pairs of operators, DB6NT and DF9NA at one station and O2921 and DF9NA the other, completed several 145 (BHz contacts on June 9, including a 3.1 km QSO across open water. These were Danish firsts on that band. Equipment resembled Gunn oscillators running about 5 microwatts. DB6NY and DF9NA used of Simicrowatts. DB6NY and DF9NA used complete a 0.5 km contact across the Dunes at the Skagen sile. DF9LN and DJSHN assisted.

These tests represented remarkable achievements, not just for the distances achieved (which are quite commendable for average weather conditions), but also for assembling gear on four bands above 24 GHz!

I have included the above information in some detail because it informs Australian microwave operators of trends overseas and this should spur them on to move further into the microwave region than 10 GHz. I am happy to include reports of any such activity in these columns. Due to my physical imitations of columns for the properties of any such activity in these properties of a p

First Worked from Australia

Ever so slowly, as more gaps are filled, this list is nearing completion. The previously published lists, atthough pro tempore, are already creating interest and tempore, are already reading interest and eventually appear in the UK SW Metre Group News Magazine, so I have to get iright. My one regret is that I know of several operators, who, for their own reasons, have declined to add their callsigns to the list, which means we are missing details of certain essential contacts; but that is their prerogative and I respect their decision.

General News

I note from CO ham radio sent to me by Graham WK6RO that, during the northern hemisphere summer, JA stations had a much restricted number of prefixes to work in comparison with a few years ago under F2 conditions. During June, July and August, prefixes contacted/heard included: 9M-TV on 53.740 and 53.760, ALT, BT4, 8VD, BV2, BV6, BV7, BV6, EKO. HL0, HL1, HL2, HL3, HL4, HL5, HL9, JD1, JT1, KC6, P29, VKTV, VK4, VK6, VR2, VS6, VS6/b. That's 13 countries and 25 prefixes.

What I do find interesting are the seven HL areas worked whereas about the only station we hear is Louis HL9UH. Possibly Korea is within single-hop Es distance from Japan and most antennas are pointed there. Also, I was unaware there were so many BV prefixes.

Keep in mind that the Ross Hull Contest extends until 1800 on 16/1/94 and on that last weekend the VHF Field Day Contest runs in parallel with the Ross Hull. Details were in December Amateur Radio.

For those who live in southern climes, remember that the last week or so in January or early February are recognised as periods when enhanced conditions often prevail across The Great Australian light, allowing contacts to Wally VKSWG at Albarry (and any others who might hopean), on the bands 144 through to conditions and equipment permit. Also conditions and equipment permit. Also remember that such conditions can work both ways, ie from Adelaide to the west and also to the east.

Watch the weather maps for a large, relatively stationary, high pressure system with a centre pressure reading of 1032 hotcopascals or higher, the centre situated well down in the Bight with the upper isobare settending right across Australia, and these having pressure gradients at high the company of the control of the control of the control of the bands can remain open for up to four days of the control of the bands can remain open for up to four days of the control of the contro

Closure

I hope that 1994 will provide plenty of DX openings and six metres will produce some new countries for you — don't write the band off, its fascination comes from its unpredictability.

Closing with two thoughts for the

month:

1. Real religion is a way of life, not a white

- cloak to be wrapped around us on the Sabbath and then cast aside into the six-day closet of unconcern, and
- Ever notice that in some shops you have to serve yourself and in others they hire salespeople to ignore you?
 73 from The Voice by the Lake.

*PO Box 169 Meningie South Australia 5264 ar

Pounding Brass Stephen P Smith VK2SPS*

Stephen P Smith VK2SPS

Part two of "How the Telegraph Came to Australia"

The colony of NSW was the next in line to adopt the telegraph. Tenders for construction of the line from Liverpool to Albury were arranged in May 1857, while the NSW Government undertook the erection of the twenty mile line from Sydney to Liverpool itself. The line opened on the 30th December 1857.

Under Governor Denison's watchful eye the first message was sent "Can you read my writing?" No answer was received for several minutes. Again the message was repeated. An answer finally arrived that the pen of the recording instrument at Liverpool had broken and had to be repaired with great haste.

Despite human inexperience, NSW was soon ringed with telegraph systems, covering a wide area of countryside.

Queensland, as an independent Colony and separated from NSW, adopted the telegraph in 1861. A tender for the construction of a line from Brisbane to NSW was undertaken by Messrs Brown at a cost of 38 pounds 5s and 6d a mile, and the line was ready for operation at Ipswich, twenty five miles down route from

Brisbane in April 1861. The line to the border was completed that same year.

Eleven years after McGowan's initiative, several thousand miles of Morse's lightning lines silhouetted the Australian countryside. Over long distances repeaters were installed. Initially, human operators read the incoming Morse signals and re-transmitted them on to their destination.

Tasmania had a telegraph line from Hobart to Launceston (internal communications) which was completed in 1857 by a firm of Canadian contractors, Messrs Butcher, Estage & Carroll, and funded by the Government. The major concern was how to link the continent with Tasmania. Technology of submarine cabling, formidable and expensive, was nits infancy at this stage. It would be the continent with the stage of the continent was the stage of the continent than the stage of the continent. Many soundings were taken in lasses Stratio were the following months until a suitable route for the laying of the cable was found.

Meantime, the Victorian and Tasmanian colonies agreed upon sharing costs for this mammoth task. Cost for cable was set at 45,000 pounds, and provided for 240 miles of cable with a single copper

conductor armoured by iron wire. This was being manufactured in England by J H Henley. The cable was completed in 1858, and reached Melbourne, aboard the ship SS "OMEO" in 1859.

In July, the SS "OMEO" and the SS "VINEO" and the SS "VINCTORIA" left Victoria from Cape Otway and began laying the three quarter inch tick telegraph submanine cable over the stern of the vessels. Paying out of the stern of the vessels. Paying out of the stern of the vessels. Paying out of the stern of the victoria of vi

longest laid cable at the time anywhere in the world. The line was officially opened on the 18th August 1859, a great engineering feat taking just over 6 weeks to complete.

The last colony to adopt the telegraph was Western Australia. A Perth newspaper proprietor Edmund Stilring approached the Colonial Secretary Barlee, offering to build a line from Perth to Fremantle, if the Government would supply and erect the telegraph poles. Barlee agreed and would provide convict labour for the erection of poles and wire. Western Australia became the only colony to employ convict I abour in the construction of the telegraph line.

The first telegraph pole was erected in Perth on 19 February 1865. The first message sent was by James Flemming (an ex convict) on 21 June 89, congratulating the inhabitants of Fremantile on this amihilation of distance between the capital and the port (distance was only 12 miles). Further private initiative would push the lines outward from Perth.

This concludes the series on early Australian Telecommunications. Next month we will cover different types of code.

*PO Box 361 Mona Vale NSW 2103

Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Why Do I Bother?

As the VK9/IO QSL Manager, many and varied are the ways of forwarding cards to operators that I use. Mostly I seem to to operators that I use. Mostly I seem to have been very unsuccessful in receiving any response from the receivers of the packets of cards that I forward to them. My pleadings for information about their operations, or requests to prepay postage, or in some cases to repay postage costs incurred, fall on deal ears.

But this week I received a card via the VK6 Bureau which almost turned me off. QSLing in general.

In December 1987 a Canadian operator on Cocos Island made a good number of world-wide contacts. Eventually, by September 1988, a small bundle of cards had accumulated in the VK90 Bureau for him. These were duly despatched to his QSL manager in Canada, with a QSL card from me and a request for an indication whether he wanted Bureau cards or not.

No reply was received.

Later, and possibly this is where I made an error of judgement, two further bundles of cards were sent, the last in March 1991. No further exchange took place until this week, when a card arrived for me via the VK6 Bureau, nearly six years later.

But should he have bothered at all with the Bureau? After all, he probably said, "QSL direct to my manager VE3MMB", which I probably have overlooked. Should I have posted back to the various Bureaux those cards which the VK9/0 Bureau received? Who pays what cost?

What do you glean from this? If the operator says "QSL via manager or direct", then DO NOT use the Bureau! When did you last check to see if your Bureau manager has done anything with your cards for V85, 6V, 9G, BY, C9, and many others too?

Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

6 Metre First!

May I thank all of those involved in successfully making two-way 6 metre contact with the continent of Antarctica on November 19th. Two other local amateurs. VK3LK and VK5NC share the privilege and, of course, Mark VK0AQ the operator at the other end (Casey Base) who, once alerted, was at the 6 metre station immediately. I would like to thank Eric VK5LP, who is involved as both Mark's QSL manager and as my personal friend. Eric undertook to telephone Mark after the opening died down and confirm that the contacts had taken place and then transfer those details to the VK0AQ cards which were issued the same week. Eric's involvement effectively legitimises the contacts.

Soon after the contact both the VHF and DXCC desks had received enquiries as to whether contacts from Antarctica counted as a country, because VKO Antarctica does not appear in the listing of the '93 callibook. I can assure you that the continent of Antarctica is a separate country for DXCC purposes and is mentioned in the footnotes on page 43 of the callbook.

Working Antarctica is the culmination of 20 years of effort on 6 metres for me and is officially country number 100, occurring just 4 days short of 20 years.

when I worked Ron VK0WW at Macquarie Island on 23/11/73.

There have been many letters and packet messages of support from one of the packet messages of support from the packet messages of support from the packet messages and packet messages an

From an Australian perspective, it is a fitting end to Cycle 22 for us all and puts us well in the forefront of 50 MHz development, with the highest number of countries contacted on the band in the world. Good one Australia.

Stephen R Gregory VK3OT PO Box 622 Hamilton VIC 3300

Repeaters —
additions, deletions,
alterations. Have
you advised the
WIA of changes
needed to the
repeater list?

Spotlight on SWLing

Robin I Harwood VK7RH*

A New Year has started and I do wonder what will happen during the next 12 months on the Spectrum. Already several HF coastal Stations have deleted their CW service in line with the decision to phase out this mode within the Maritime Service. The Canadian Coastguard, who operates stations VAR and VCS, did drop Morse at the end of last September, and the Naval stations at Halifax (CFH) and Vancouver (CKN) have probably done likewise by now.

One reliable HF signal has disappeared altogether. This was ZLB/ZLW at Awarua on the South Island of NZ. Other HF coast stations throughout NZ closed down as well on 30 September, A network of VHF stations has been established to cover the Dominion and the Royal New Zealand Navy will be maintaining an HF watch until a private enterprise service is established. This will be located near Lake Taupo and reportedly close to the current Radio New Zealand International site, in six month's time. Awarua, which is near to Invercargill. was the main HF site. Mainly because of the excellent soil conductivity it was well heard throughout the world. Sadly, another part of our radio history has gone

off the airwaves.

And while we are on historical sites. I was recently in Hobart, attending a WIA branch meeting. This branch now meets at the former site of VIH, Hobart Radio, on the Queens Domain, overlooking the picturesque Derwent River. VIH, I believe, commenced at this site around 1912-13 and continued till it closed in February 1992. The local WIA branch leases the site from the Hobart City Council and once again, radio signals have been emanating from the site. Sadly, the original antennas have been pulled down but the local branch has erected some more suitable to amateur radio needs. Listen out for VK7SB on the bands, particularly on the Tuesday evening Tasmanian Devil Net.

While listening on the 40 metre band early in November, I came across the "Voice of Nigeria" on 7255 kHz. It was in English with reasonable signals. When first heard, the signal was mixed in with a European broadcaster in Spanish but after this went off at 0630, the channel was clear. Signals only lasted for 20 minutes before rapidly fading out which, I presume, was due to sunrise in Lagos. In tropical areas there is no twilight as in temperate zones and this, the Gray-line effect as it is known, is very short. I sent off a report and now am wondering if they will reply. For I continued to monitor the station daily and there was a bloodless coup on the 17th, which changed the way the programs were presented. It was interesting to hear history being made on shortwave.

Thanks to Mick Power VK4NGW, of Rochedale (Qld) who kindly wrote to confirm that I have been indeed hearing KCWW in Arizona. Apparently it is easily heard there near Brisbane and is regarded as a propagation marker for trans-Pacific signals. KCWW is not the only one on that frequency but is very dominant because of its 50 kW sender which comes over well on this relatively free channel here. And while I think about it. I note that 2RPH has moved from 1539 to 1224 kHz, permitting us to hear that Californian station 1 kHz higher. It is apparently right on the Pacific coast at Azle and although rated at 5 kW, propagates well across the vast ocean. Jim VK2BGG, in Wauchope also writes to inform me that he remembers hearing American stations around 1500 kHz in the forties. One station in particular stood out

- Radio KGEI with Willis Conover and Jazz. This station. Jim. is still on-air on 9615 kHz but signs off earlier at 05007. It is now a religious station and broadcasts exclusively to Latin America in Spanish. Willis Conover is still heard with "Music USA" over the VOA at rare times and I have a feeling that they may be replaying tapes of past programming. I too can recollect hearing him over the VOA, when I started out listening in the mid fifties. He must be an old man now.

Well, that is all for now. If you have any comments or news, please feel free to send them to the addresses below. Until next time the very best of monitoring and

73 — Robin VK7RH. 52 Connaught Crescent West Launceston TAS 7250 VK7RH @ VK7RRS

Education Notes

Brenda M Edmonds VK3KT*

I would like to begin by wishing all readers a happy and prosperous New

Although most of us have learnt from experience not to expect a sudden increase in health, wealth or happiness simply because the calendar has flipped over to another year, many of us still find the start of a new year an appropriate time to evaluate both past performance and future plans.

For administrative and financial purposes, the WIA is structured on a calendar year basis rather than the traditional financial year of July to June, so it will soon be time to think of Annual Reports.

Many groups and clubs will be busy planning activities for 1994, and deciding whether or not to run classes this year. From comments I have heard, there seems to be a very wide range of opinions on the place of classes in the clubs. Some see the classes and examinations as their major income earner for the year, others provide the service at little or no cost to the students. I doubt if anyone has collected any data on either the success rates of the students or the continuing club or WIA memberships of students according to the cost of the courses. It would be an interesting topic to examine. I realise, of course, that there are very many other factors involved besides the cost.

What is a "successful class"? Is it the number of passes, the percentage, the number of new recruits to club activities, the fellowship developed within the group? From some reports I have received, there is developing an awareness that some classes are consistently "good", while others have a lower reputation. When the numbers of students in an area each year is small. there is little chance of the "poor" classes being taken over by the "good" as would happen if market competition ruled. So it is up to the clubs and individuals to ensure that the classes run are the best nossible

Perhaps this is another area where sharing of information and ideas would benefit both students and lecturers. We do not have a convenient forum where lecturers can meet and share ideas as schoolteachers would at a subject conference day, but I understand that some areas have tried bringing a number of clubs together for discussions of both classes and examinations.

If there are lecturers who would like to offer their ideas, or recent students who have constructive suggestions for classes. I would be very pleased to receive them. and perhaps collate them for publication in this magazine. There must be many lecturers who feel a bit isolated and would appreciate the support of knowing that others have used a similar approach. There may even be amateurs who would volunteer to assist with classes if they felt there was some support available

To close, I offer you two New Year Resolutions to adopt and keep:-

1. to introduce at least one new person to amateur radio this year.

- 2. to recruit one new member of the WIA this year.
 - My best wishes to you all for 1994. PO Box 445 Blackburn VIC 3130. ar

*WIA Federal Education Co-ordinator

HE PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column: the second column lists the predicted MUF (maximum useable frequency): the third column the signal strength in dB relative to 1 uV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 "V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 µV at the receiver's input and the Smeter scale is 6 dB per S-point.

S-points W in 50 ohms dB(uV)50.00 S9 34 25.00 S8 28 12.50 S7 22 6.25 S6 16 3.12 S5 10 1.56 **S4**

VK EAST - AFRICA

0.78			S3	- 2	2
0.39			S2	-	8
0.20			S1	-1	14
The	tables	are	generated	bv	the

GRAPH-DX program from FT Promotions assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical guad) and a shortterm forecast of the sunspot number. Actual solar and geomagnetic activity will

affect results observed. The three regions cover stations within

the following areas: VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7 VK WEST The south-west of Western

Australia. Likewise, the overseas terminals cover

substantial regions (eg "Europe" covers most of Western Europe and the UK)

The sunspot number used in these calculations is 39.5. The predicted sunspot numbers for February and March are 37.6 and 37.2 respectively.

— EUROPE

6.6 7.5 10.0 12.8 15.3 17.0 18.3 17.8 16.8 15.5 15.0 13.4 11.8 9.9 8.6 7.8 -1 0 0 -1 -1 1 8 20 28 33 36 35 32 27 20 13

VK FAST

MUF 9.4 8.6 8.4 9.7 12.6 16.1 19.0 21.1 22.6 22.1 21.0 20.0 18.9 16.9 14.4 dBU -4 -13 -17 -13 -4 -2 -5 -8 11 17 21 23 25 23 24 26 27 28 29

234567891011213145161718

28.5

855

ar

24.9

-35 -20 -8 -1 -4 -8 12 12 11 10 4 7 -23 36 19 -9 -3 1 4 3 0 -1 10 24

VK : UTC	VK \$ UTC 1 2 3 3 4 5 6 6 7 8 8 9 9 10 11 13 13 14 15 16 17 7 18 19 20 20 21 223 234	VK UTC	UTC 122
SOUT 19.4 19.7 20.3 20.3 20.1 19.8 19.4 18.6 17.9 17.0 16.1 15.5 14.9 14.3 13.6 12.9 19.6 9.6 9.0 12.4 16.4 16.4 19.0	MUF 14.2 14.4 16.7 19.6 19.6 19.6 19.6 19.6 19.1 18.3 16.2 15.2 14.6 13.9 12.8 12.8 13.0 12.7 13.5	EAST 26.2 26.8 26.9 26.5 26.0 25.2 24.1 22.9 19.2 16.3 17.2 16.2 15.0 14.3 16.6 19.9 22.5 23.4 25.0 25.0	MUF 9.0 8.5 11.6 17.7 23.5 25.0 24.3 21.2 20.2 19.6 18.9 18.1 15.0 14.3 13.6 11.6 11.8
dBU 111 111 111 112 13 13 144 25 264 266 267 27 244 255 266 18 17 14 12	H - dBu 13 9 9 9 9 7 7 7 6 7 7 7 8 10 12 22 26 22 29 25 22 19 15	dBU 27 27 27 27 28 29 33 34 35 36 37 37 38 39 34 40 39 28 27 27	dBU -7 -16 -6 -6 3 6 8 9 9 9 113 16 20 23 24 26 27 28 28 27 25 20 14 6
- AS FOT 155 16.1 16.7 16.8 16.6 16.5 15.8 15.8 15.2 14.5 13.7 12.3 11.3 11.6 10.6 10.0 9.3 7.4 7.4 7.4 15.0	AFI FOT 103 108 13.0 14.0 14.0 14.0 14.0 13.9 13.5 12.1 11.3 10.6 9.3 9.0 8.9 9.0 8.8 9.5	SOU FOT 21.7 22.1 21.8 21.2 20.4 19.5 18.4 16.4 15.2 14.4 12.5 11.5 10.8 12.5 17.4 18.4 12.5 17.4 18.4 19.5 10.8 12.5 17.4 18.4 19.5 10.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	FOT 6.9 6.6 18.0 19.6 19.6 19.6 19.6 19.6 15.0 14.7 12.5 11.5 10.8 10.9 9.0 8.4
14.2 10 9 9 9 10 13 18 21 21 33 33 32 29 27 24 21 13 -8 -8 -14 11 20 15 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	RICA 14.2 13.9 7 4 1 1 0 0 0 0 1 1 4 8 11 11 15 18 23 5 25 24 24 24 23 19 16 15	TH I 14.2 34 35 36 38 39 42 46 48 48 47 46 42 40 39 38 37 37 37 37 34 34	14.2 0 ·2 -6 ·8 ·7 -4 ·1 10 ·19 27 ·33 35 35 35 33 31 28 23 14 10 ·6
18.1 12 12 12 13 15 16 16 16 17 23 23 23 21 18 16 16 16 17 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	18.1 7 6 8 8 9 7 6 6 6 6 7 7 9 10 11 11 12 13 122 10 8 8 5 5 6	PACI 18.1 13.5 36.337 38.8 40.2 42.4 41.0 40.0 39.9 37.5 32.2 29.6 26.0 30.3 35.3 35.3 35.3 35.3 35.3 35.3 35	18.1 -13 -13 -13 -13 -13 -15 -16 -17 -10 -15 -16 -17 -17 -17 -17 -17 -17 -17 -17 -17 -17
21.2 9 9 9 100 101 111 112 133 155 133 100 5 5 2 -1 -6 -6 -11 -18 -36 -36 -36 -36 -36 -36 -36 -36 -36 -36	21.2 -1.4 866666776531-1.4 -7.997888-4	FIC 21.2 21.2 33 34 34 34 35 36 35 37 36 35 32 30 225 22 177 13 14 21 31 31 32	21.2 -29 -27 -12 -7 -12 -7 -10 -12 -14 -16 -18 -18 -18
24.9 2 2 4 4 4 4 4 4 4 3 3 0 0 6 4 12 -17 -7 -22 -28 -36 -10 -11 -11 -11 -11 -11 -11 -11 -11 -11	249 14 13 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	24.9 30 30 30 30 30 28 25 23 21 19 16 12 7 2 3 -2 8 8 18 24 25 27	24.9 -26.4 -5 8 9 9 9 10 10 9 9 7 5 5 0 -4 11 11 -120 -25 :: 37 39
28.5 -8 -6 -5 -5 -4 -4 -5 -7 -10 -16 -23 -31 -38 -31 -38 -31 -38 -31 -32 -32 -32 -33 -33 -33 -33 -33 -33 -33	285 -30 -28 -15 -6 -6 -6 -6 -6 -6 -7 -7 -10 -14 -20 -32 -39	28.5 22 24 24 24 23 22 21 19 15 10 7 7 3 1 1-19 -5 8 15 15 17 18 20	28.5 -14 0 4 5 5 4 3 1 -1 -2 -5 -9 -14 -21 -30 -38

VK FAST - MEDITERRANEAN

3	14.3	1	10.8	0	1	-3	-14	-27
4	21.0	6	16.3	-3	- 6	- 6	2	-4
5	22.7	7	18.6	-8	4	7	6	- 1
6 7 8 9	22.6	6	18.5	-10	3	6	5	1 0
7	22.3	6	18.2	-10	3 4 6	6	5	0
8	22.0	6	17.8	-A	4	6	- 5	Ô
9	21.3	7	17.6	-4	6	6	4	- 4
10	20.3	7 6 6 7 9	16.4	1	8	8	5 5 4 4	-2
11	19.3	11	15.5	7	11	8	3	-5
12	18.2	14	14.5	14	14	10	3 2 0	0 -1 -2 -5 -8 -12
13	17.5	18	13.9	20	17	10	ō	-12
14	16.8	23	13.3	27	20	11	-1	-15
15	16.2		13.1	30	20	10	-4	-20
16	15.4	27	12.0	30	19	7	-8	-25
17	14.6	28	11.3	30	17	4	-13	-32
18	13.9	29	10.6	28 27	14	0 -2	-18	-39
19	13.4	30	10.2	27	12	-2	-21	
20	14.0	29	10.5	29	14	1	-17	-37
21	16.1	26	12.7	30	20	10	-4	-20
22	15.9	23	12.3	26	17	8	-4	-20 -20
23	14.4	19	11.1	19	11	2	-12	-28
24	14.1	12	10.8	12	6	-3	-17	-35

21.2 28.5

		-25	3	7.3	29	9.4	20	
		-26	1	7.1	24	9.2	21	
		-21	1	7.0	16	9.1	22	
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	-27	-11	2	7.6	2	9.8	24	
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	-18 -37	-6	2	7.5	-4	9.9	3	
3	-19 -38	-6	3	7.7 7.5	0	10.1	3	
	-23	-9	3	7.5	3	9.7	4	
	-33	-15	1	6.9	6	8.8	5	
	***	-19	1	6.8	13	8.6	5 6 7	
	-31	-11	9	7.9	23	10.0	7	
	-8 -29	6	21	10.4	25	13.0	8	
	-3 -21	9	21	9.8	24	12.9	9	
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HAMADS

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FOR SALE SA

■ YAESU FT:707 torv s/n 2C:210330 excellent condition in original carton with manual \$650; YAESU FRG-8800 com receiver s/n 8C:210078 as new in original carton \$850; 5 ELEMENT duc-band beam for 10/15 metres \$125. Dennis VK5BKD (08) 376 1008.

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- VALVES type 211, 2A3, 50, KT88; OLD valve audio equipment in any condition. Bob VK2ZHS QTHR (02) 567 5390.

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- VZ200 DATA CASSETTE recorder or circuit diagram with component values. Stanley VK6I V OTHR (098) 41 5040.
- YAESU Mobile Antenna Resonator RSL-14 (14 MHz). Bill VK6LT QTHR (09) 457 1080.

MISCELLANEOUS

 PLEASE SEND your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. Let us save something for the future.

UPDATE

1994 Membership Fees

The 1994 Membership Fees for the VK5 and VK7 Divisions of the WIA were incorrectly listed in the WIA Divisions directory published on page 3 of the December 1993 issue of Amateur Radio magazine.

The 1994 fees for those Divisions are as follows:

(F) \$70.00 (G) (S) \$56.00 (X) \$42.00 VK7

(F) \$69.00 (G) (S) \$55.65 (X) \$40.00

(X) \$40.00
Make sure you correct your December
Amateur Radio now!

ar

Technical Correspondence

Reluctant Oscillator

The EDK Multi 7 is a 23 channel crystal controlled rig which I have been using for years, in the car at one time, but now as a base station unit.

When a friend of mine was looking for equipment to get on the air I had no qualms in recommending one when he heard of one advertised at a modest price. Limited by the use of crystals certainly, but more versatile rigs would come later.

My friend's Multi 7 gave him good service, too, with the frequencies it carried, but when he obtained his full call and decided to give packet a go, the problems began. He ordered a set of crystals for the local BBS and duly collected them. The "fun" was about to start. There were problems with the modem arrangement too, but that is another story.

When the crystal supplier heard about the problems he invited my friend back with his transceiver as he wanted to verify the quality of the crystals. After checking the crystals as being OK it was eventually possible to activate the Multi 7 to receive some packet signals. However, while the transmitter did work, the output was down on that compared with that person's own Multi 7, and he declared the unit very sick and in need of a "doctor".

Once home again my friend's unit worked briefly, but would not function at next switch-on. In fact, from then on it would work perhaps once in ten or more tries.

Feeling partly responsible, as the recommender of the unit in the first place. I contacted the previous owner, who said he had never modified it in anyway, but was aware that it did not like operating below 146 MHz. He also observed that there may have been a number of versions to satisfy world markets. In fact, my own unit's dial carried numbers only, while this unit had a mixture of letters and numbers. The previous owner said he understood that this particular set was designed for 146-148 MHz operation. Our local BBS is on 144.85 MHz.

At home I studied my own unit's circuit diagram and found that the receiver used an overtone oscillator and that the handbook quoted a frequency range of 144-146 MHz

On my next visit, my friend and I opened up his unit and found that the oscillator tank circuit coil slug was fully in. Now, to make an already long story a bit shorter, we found that by adding some 22 pF of capacitance across this coil worked wonders. A permanent fix required getting at the

under side of the receiver board (not the board carrying all the crystals) and soldering in the small capacitor.

No more problems! Hope these findings may be of some use to others.

Murry Burford VK5ZQ *261 Belair Road Torrens Park SA 5062

Help stamp out stolen equipment. Always include the serial number of your equipment in vour Hamad.

lamads

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Conditions for commercial advertising are as follows: \$25.00 for four lines, plus \$2.25 pe line (or part thereof) Minimum charge - \$25.00 pre-payable

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☐ For Sale

□ Wanted

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It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are compiled with strictly.

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Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer for are especially welcome. The WIA cannot assume responsibility for loss or damage are specially welcome. The WIA cannot assume responsibility for loss or damage lessur of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Fill out the following form and send to:

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Ham heaven.

Some days Duncan thinks that he must have died and gone to heaven. Whichever way he turns he is surrounded by the finest ham radios around. What's a guy to do? He plays with them all day. And if that wasn't good enough, he gets paid for it as well.

Duncan Baxter...well VK 3LZ actually, let's call him by his 'real' name, is our resident ham radio expert. No one knows the Icom range better than VK 3LZ. He's been with us virtually from the start, some ten years in fact.

Now, if you'd like to find out about the latest in base stations, or virtually anything else to do with amateur radio operation, why not give VK 3LZ a call. Or you could simply drop in and see him at ham heaven ... err ... our bead office that is.

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